



House of Commons
Science and Technology
Committee

Scientific Advice, Risk and Evidence Based Policy Making

Seventh Report of Session 2005–06

Volume II



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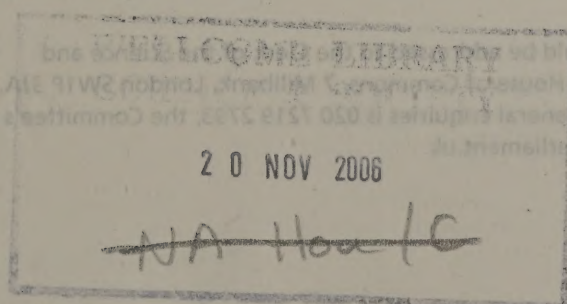
Scientific Advice, Risk
and Evidence Based
Policy Making

Seventh Report of Session 2005–06

Volume II

Oral and written evidence

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The Science and Technology Committee

The Science and Technology Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Office of Science and Innovation and its associated public bodies.

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A list of Reports from the Committee in this Parliament is included at the back of this volume.

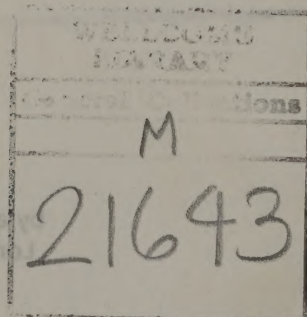
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The current staff of the Committee are: Dr Lynn Gardner (Clerk); Celia Blacklock (Second Clerk); Dr Anne Simpson (Committee Specialist); Ana Ferreira (Committee Assistant); Robert Long (Senior Office Clerk); and Christine McGrane (Committee Secretary).

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Witnesses

Wednesday 15 February 2006

Page

Professor Sir David King, Government Chief Scientific Adviser, and **Ms Sue Duncan**, Chief Government Social Researcher Ev 1

Wednesday 10 May 2006

Dame Deirdre Hutton, Chair and **Dr Andrew Wadge**, Director of Food Safety Policy and Acting Chief Scientist, Food Standards Agency Ev 16

Wednesday 24 May 2006

Dr Richard Pike, Chief Executive, Royal Society of Chemistry, **Professor Martin Taylor**, Physical Secretary and Vice-President, The Royal Society, **Dr Caroline Wallace**, Science Policy Adviser, Biosciences Federation, and **Dr Peter Cotgreave**, Director, Campaign for Science and Engineering Ev 30

Professor Tim Hope, Professor of Criminology, Keele University, **Mr Norman Glass**, Chief Executive, National Centre for Social Research, and **Mr William Solesbury**, Senior Research Fellow, ESRC Centre for Evidence-Based Policy and Practice Ev 38

Wednesday 7 June 2006

Sir Nicholas Stern, Head of Government Economic Service, Cabinet Office Ev 47

Professor Sir Gordon Conway KCMG, Chief Scientific Adviser, Department for International Development, **Professor Paul Wiles CB**, Chief Scientific Adviser, Home Office, and **Professor Frank Kelly**, Chief Scientific Adviser Department for Transport Ev 51

Wednesday 5 July 2006

Rt Hon Alistair Darling MP, Secretary of State for Trade and Industry, **Professor Sir David King**, Government Chief Scientific Adviser and Head of the Office of Science and Innovation, and **Sir Brian Bender KCB**, Permanent Secretary, Department of Trade and Industry Ev 66

List of written evidence

	Page
1 Government	Ev 86, 135, 200, 203
2 Orange	Ev 93
3 Professor Nancy Cartwright	Ev 96
4 Environment Research Funders' Forum	Ev 97
5 The Royal Society	Ev 102
6 British Psychological Society	Ev 108
7 Biosciences Federation	Ev 110
8 Professor Nigel Harvey	Ev 111
9 Campaign for Science and Engineering in the UK	Ev 114
10 Sense About Science	Ev 116
11 Institute for the Study of Science, Technology and Innovation, University of Edinburgh	Ev 119
12 Royal Society of Chemistry	Ev 122
13 Science Council	Ev 127
14 Mobile Operators Association	Ev 129
15 Cancer Research UK	Ev 133
16 Centre for Crime and Justice Studies	Ev 145
17 Department for Transport	Ev 149
18 Department for Environment, Food and Rural Affairs	Ev 157
19 Department for International Development	Ev 162
20 Department for Communities and Local Government (DCLG)	Ev 170
21 William Solesbury	Ev 172
22 Department for Education and Skills	Ev 176
23 Food Standards Agency	Ev 187
24 Council for Science and Technology	Ev 193
25 Committee on Radioactive Waste Management (CoRWM)	Ev 197
26 Professor Malcolm Grimston	Ev 203

21693

Reports from the Science and Technology Committee

Session 2005-06

First Report	Meeting UK Energy and Climate Needs: The Role of Carbon Capture and Storage	HC 578-I
Second Report	Strategic Science Provision in English Universities: A Follow-up	HC 1011
Third Report	Research Council Support for Knowledge Transfer	HC 995-I
Fourth Report	Watching the Directives: Scientific Advice on the EU Physical Agents (Electromagnetic Fields) Directive	HC 1030
Fifth Report	Drug classification: making a hash of it?	HC 1031
Sixth Report	Identity Card Technologies: Scientific Advice, Risk and Evidence	HC 1032
First Special Report	Forensic Science on Trial: Government Response to the Committee's Seventh Report of Session 2004-05	HC 427
Second Special Report	Strategic Science Provision in English Universities: Government Response to the Committee's Eighth Report of Session 2004-05	HC 428
Third Special Report	Meeting UK Energy and Climate Needs: The Role of Carbon Capture and Storage: Government Response to the Committee's First Report of Session 2005-06	HC 1036
Fourth Special Report	Strategic Science Provision in English Universities: A Follow-up: Government Response to the Committee's Second Report of Session 2005-06	HC 1382
Fifth Special Report	Research Council Support for Knowledge Transfer: Government Response to the Committee's Third Report of Session 2005-06	HC 1653
Sixth Special Report	Watching the Directives: Scientific Advice on the EU Physical Agents (Electromagnetic Fields) Directive: Responses to the Committee's Fourth Report of Session 2005-06	HC 1654

Oral evidence

Taken before the Science and Technology Committee

on Wednesday 15 February 2006

Members present:

Mr Phil Willis, in the Chair

Adam Afriyie
Mr Jim Devine
Dr Evan Harris

Dr Brian Iddon
Mr Brooks Newmark
Dr Desmond Turner

Witnesses: **Professor Sir David King**, Government Chief Scientific Adviser, and **Ms Sue Duncan**, Chief Government Social Researcher, gave evidence.

Q1 Chairman: Good morning, Sir David, good morning, Ms Duncan. Welcome to you both and could I welcome a packed gallery this morning to hear evidence from the Government Chief Scientific Adviser and the Chief Government Social Researcher. Now, would it be possible, Sir David, if you could start by, each of you, just saying briefly what your roles are, so the Committee is clear as to what they are.

Professor Sir David King: The Chief Scientific Adviser's role is to advise the Prime Minister and the Cabinet on all matters related to science, whether it is science policy in terms of innovation and wealth-creation, science policy in dealing with risks or science policy dealing with opportunities. I also run the Office of Science and Technology and the Office currently has a staff of around 150 people. One section of the Office deals with the science and engineering budget, which is currently around £3 billion, and that goes to the research councils. The other section is the trans-departmental science and technology section, which provides me with the back-up in most of that function.

Ms Duncan: My role is rather more modest. My principal role is to set standards for the Government Social Research Service in areas of professional and ethical practice and to provide the resources to do that, so we issue guidance and provide training and that sort of thing. I have no role specifically in advising ministers; that is done via departmental experts.

Q2 Chairman: So is Sir David your direct line manager?

Ms Duncan: No, my direct line manager is Professor Sir Nick Stern, who is the Chief Economist within the Treasury. I am just in the process of transition of moving from the Cabinet Office to the Treasury, so I report to Nick Stern.

Q3 Chairman: So what is the relationship between your two roles then?

Ms Duncan: I have close links with OST and I have regular meetings with Sir David's staff—

Q4 Chairman: Weekly?

Ms Duncan: Monthly, probably about that. I am also a member of the Chief Scientist's Advisory Committee, so that is a very good place to link with the departmental chief scientists and I feed into that for the social sciences.

Q5 Chairman: Is there an example of where you have worked together on a policy area, crossing between social science and technology policy?

Professor Sir David King: I have been very keen, since taking this post, to take science out of the box, in other words, to see that what we normally call 'science' is fully integrated with the entire knowledge base, so remove the boundaries. I am working closely with social sciences, economists, even arts and humanities where it seems appropriate, right across the board. It is important, for example, to note that we now fund the research councils all the way from arts and humanities to particle physics, so integrating the knowledge base is really what I am trying to do. Therefore, in terms of the Chief Scientific Adviser's Committee that Sue has referred to, we do have science advisers from all government departments who include several social scientists, so we do try and co-ordinate the whole patch.

Q6 Chairman: One of the queries that has been made to us, Sir David, is that, whilst you frequently speak on matters of what I would call 'hard science' or 'environmental science', we have never heard you speak much on social science in terms of natural and social science. We wondered whether that was because you saw that as a lesser part of your role or is that an unfair criticism because you looked hurt then?

Professor Sir David King: Thank you, I am glad my expression was so clear! Yes, I do feel hurt by that! For example, you mentioned the environmental issues and that is only one small part of the advice that I give, but nevertheless the environmental advice is given with a very clear input from social and economic experts. For example, I run the Government's Foresight Programme and in each of the Foresight programmes, whether it is on cyber-security, which we have done, or on flood and coastal defence management, we have engaged

social scientists, economists and the biological and physical scientists whom you might more clearly expect to see there.

Ms Duncan: Perhaps I could give an example which draws on one of your case studies, identity cards, where a lot of the research obviously falls on Sir David's side of the house, but that work was supported by social research done within the Home Office to look at the acceptability of introducing that scheme and to gauge public attitudes.

Professor Sir David King: The Home Office Chief Scientific Adviser himself, Paul Wiles, is a social scientist and he is part of my inner group of chief scientific advisers.

Q7 Chairman: So are you responsible then for ensuring the quality of social science research and promoting it across government? I am still trying to get a handle on what your role is.

Ms Duncan: Unlike the natural sciences, the central heads for social sciences are separate and there is no equivalent chief social scientist, so I am the central head of profession for social research. Karen Dunnell is the National Statistician and head of profession for statisticians, and the head of profession for the economists is Sir Nicholas Stern, so there is no equivalent on the social science side for Sir David's role. I work closely with my opposite numbers on the other social science side and obviously—

Q8 Chairman: Do you think that is a weakness in scientific advice to government, that there is not the equivalent of Sir David in the social science area?

Ms Duncan: I am not sure.

Q9 Chairman: You can be honest.

Ms Duncan: Yes, absolutely. I am not sure that it is a weakness. It would be if we did not work closely together and I think in the last few years we have been putting a lot more effort into co-ordinating across the social sciences. I think that is crucial and it has actually shown itself in the way that social science analysis and advice on policy is actually becoming more co-ordinated, and all of us, as central heads, have put a lot of work into that.

Professor Sir David King: I think your questioning of that in a way ignores my previous answer, if I may say, which is that the Chief Scientific Adviser incorporates social sciences into the activities. For example, we are going into government departments to review the quality of the evidence-based policy advice system, and Sue has assisted me in that process in going into government departments so that, when we look at the evidence-based advice, we are looking right across the board at the R&D base used in those departments, in the physical sciences, biological sciences, medical sciences, social sciences and economic sciences, so we are looking across the patch.

Q10 Chairman: Do you feel that the quality of that link between social science research and policy is weak?

Professor Sir David King: I think we could always improve. I think that a very large part of the function of my office is to see that we are continually challenging the process to improve, so I do not believe that we have arrived at a good position, but we are certainly turning things around.

Ms Duncan: Would it be helpful if I mentioned some of the things that we are doing to strengthen that link between social sciences and policy?

Q11 Chairman: It would, yes.

Ms Duncan: The Professional Skills for Government initiative, which is about equipping all civil servants with skills to do their jobs properly, one of the core skills for policy-makers is that they have expertise in using the research and analysis and we are working with our social science colleagues to provide training. There is also the Co-ordination of Research and Analysis Group which actually brings social science heads together with policy-makers in an open dialogue, and I think those sorts of issues are actually strengthening how we work to feed into policy.

Q12 Dr Iddon: Why is there not an equivalent for the natural and physical sciences, indeed technology as well, that would match the Government Social Research Service, the Government Economic Service, the Government Statistical Service and the Government Operational Research Service? There does not appear to be a government organisation for the natural and physical sciences and technology.

Professor Sir David King: Unless you want to call the Office of Science and Technology precisely that. The Office funds the science base in our university sector, the Office reviews the quality of science, as I have just said, in every government department, and, through the chief scientific advisers, I am trying to pull the evidence base in the sciences across the patch together, so I think that is the very function of the Office of Science and Technology.

Q13 Dr Iddon: But it is embedded, David, in a particular state department rather than being detached from all the state departments with an umbrella government organisation, as all the rest are. Do you think that is a disadvantage, being attached to the DTI?

Professor Sir David King: The Office of Science and Technology was placed in the DTI some years ago with an effort to focus on the innovation and wealth-creation agenda from within the science base, and that is the rationale behind it. I believe there is much work still to be done. We have a tremendous opportunity. There is a tremendous platform from the science base today with probably the highest density of SME clusters emerging from our universities in the world, and I see that as a massive opportunity for new wealth-creation in the UK. There is still a job to be done there, but your question, Brian, is a good one because the role of the Chief Scientific Adviser is to report to the Prime Minister and the Cabinet and yet my office is in the DTI. I think that tension exists and I feel it many days of the week.

Q14 Dr Turner: I remember, at least I think I remember, in my youth that there was a body called the 'Scientific Civil Service'. Whatever happened to it? Why did it disappear and do you think it really was expendable?

Professor Sir David King: The Scientific Civil Service, I think, served a very good purpose and at the same time I think it developed a glass ceiling in the sense that promotion to higher managerial positions within the Service appeared to be blocked to those who were going into the Scientific Civil Service. Therefore, I think many good people decided not to give themselves that label so that they would have the opportunity of promotion to the top. I am simply giving you the reasons why I believe the Scientific Civil Service notion was taken away. I am now operating as head of profession for science and engineering within government and we are trying to strengthen that role again. What is very important, just as a follow-up to your point, is to note that the privatisation of government laboratories, such as the Laboratory for the Government Chemist, the LGC, means that we are losing scientific expertise from within the Civil Service, so the opportunity for people to bubble up into top positions in the Civil Service with a hard science training is being reduced as this happens. It is an unintended consequence, if you like, of the privatisation. Now, we are trying to correct that through this role as head of profession.

Q15 Dr Turner: Having said that about the Laboratory for the Government Chemist, did you have any input into the discussions on the future of the Forensic Science Service because the same issues apply?

Professor Sir David King: The same issues apply and, as a matter of fact, the LGC does do forensic work for the Home Office. Your question is a very direct one and the answer is, no I was not heavily involved in that.

Q16 Dr Iddon: Perhaps I can go back to our original discussion about your position having been moved from the Cabinet Office, where it was originally started, up to the DTI and that you are embedded there. I agree with your statement, that it is a good thing to focus on knowledge transfer and getting science and technology moving there to the aid of the country, but do you think that the focus on that and the fact that you are embedded in that single state department detracts from some of the other activities that we would expect the Government Chief Scientist to be involved in?

Professor Sir David King: I think, to be honest, this has not been a major problem for me probably because of the visibility I was given for the foot and mouth disease epidemic. In other words, I think it is recognised in all departments that I serve this super-departmental role, that I am not tied within the DTI, but I report to the Prime Minister. I think that is now widely recognised, so I do not think that I personally find difficulties arising from that.

Q17 Chairman: Would you prefer to be in the Cabinet Office rather than the DTI?

Professor Sir David King: That is a very big question.

Q18 Chairman: Could you give me a little answer—yes or no?

Professor Sir David King: I do not want to give a simple yes or no, and perhaps I may just slightly elaborate. This would probably mean taking all 150 of us into the Cabinet Office, and Sir Gus O'Donnell is very keen to get the Cabinet Office down to be a lean, mean machine, so he is not keen to take on such a big number of civil servants into the Cabinet Office. We also carry this large budget, £3 billion, so I think, for both those reasons, it is not seen by the Civil Service to be appropriate.

Q19 Dr Iddon: That has probably killed my question which is directed to Sue Duncan and that is: do you agree that moving the Government Social Research Service from the Cabinet Office to the Treasury was a good thing?

Ms Duncan: Yes, it is actually a move that I very much welcome. It has happened as part of Sir Gus O'Donnell's review of Cabinet Office functions, but, for the Government Social Research Service, it means that we will both be co-located with the professional unit for the Government Economic Service, so it encourages closer working there, and it also means that we are in the department that leads on the spending reviews, which draw heavily on government-generated research and evidence, and it is actually an opportunity for me to have a stronger input into that process. I have already discussed that in a preliminary way with both Professor Stern and with the Permanent Secretary of the Treasury, and that is something I will be looking to develop when I move.

Q20 Dr Iddon: I think your answer reflects a worry that I have and the question, therefore, is: by being embedded in the Treasury, you obviously spend a lot of your time, as you have just described, on Treasury-related matters.

Ms Duncan: Yes.

Q21 Dr Iddon: Does that not detract from the amount of time you should be spending on the other major state departments?

Ms Duncan: I agree that that is a risk in my move to the Treasury, but it is pretty clear that that is not the intention and still my primary function is to be the head of the Government Social Research service and to ensure standards and quality both of its staff and the work that it does, but that is certainly something that I will have to be discussing with my new line manager when the move actually takes place.

Q22 Chairman: In terms of your role as independent Chief Scientific Adviser principally to the Prime Minister and the Government, is there not a contradiction between that role and then managing what is basically a very significant department? Would it not be better not to have that responsibility and just purely to have the responsibility of being an independent adviser to the Prime Minister and the Government?

Professor Sir David King: In my role as independent adviser, it is absolutely critical that I have the support that I have and, as a matter of fact, I think the support is pretty minimal. We are a lean, mean machine in the Office of Science and Technology. I, for example, could list for you the various committees that I operate with and through, a number of which I chair. If you take one of them, for example, the Global Science and Innovation Forum, this forum is the only forum that brings together the Foreign Office, UK Trade and Industry, DTI, Defra, the Royal Society, the research councils and the British Council to co-ordinate our approach to foreign policy, covering the whole area of science and technology. That in itself is a pretty good, challenging job and, engaging in that process, I make many trips abroad in dealing with all of our bilateral arrangements with other countries, and all of our negotiations with Brussels, for example, on the Framework Programme take place through my office, so that is just on the international scene. We have the equivalent in the trans-departmental science and technology section, dealing with science in government. The review process I have described is a big process. Each review takes about six months. When you go into a government department, so there is a lot of work to be done. I think it would be wrong to think that my advice is given from, if you like, the top of my head as a scientist. For example, if there is an issue, such as avian flu, I will make sure that the leading scientists give me a full briefing on avian flu so that I am fully informed when I go in to give my advice. Now, the process of drawing those people together requires an office to provide the back-up.

Q23 Dr Turner: What is your relationship with the chief scientific advisers of government departments, at least those government departments that do have chief scientific advisers, and that is another question I want to go back to? Do you see yourself as their boss, their advocate or some kind of counsellor? What is the relationship?

Professor Sir David King: The chief scientific advisers in government departments, we now total nine, including myself, and these chief scientific advisers I am distinguishing, and I think this is in your question, as those people who have been parachuted in as expert scientists from the university community or from industry. These people are responsible to their secretary of state for the evidence-based policy advice system in their department. My line of responsibility to the Prime Minister means that, in order to cover the patch across government, I also need the chief scientific advisers to report to me, but that is very much a dotted line; their direct line is to the secretary of state in their department. I think the relationship is not only a good one, it is an absolutely critically important relationship because, taking all the chief scientific advisers together, we do cross the patch. I mentioned Paul Wiles, who is a social scientist, and Frank Kelly is a mathematician and Howard Doulton is a biological scientist, so we cover the expertise across the wide sciences. Having that

capability for Paul Wiles, for example, in the Home Office to call on that other expertise amongst the chief scientific advisers, I think, is important to all of us.

Q24 Dr Turner: But there have been occasions, and you have already mentioned foot and mouth which clearly was an occasion, and we can talk about it because MAFF does not exist anymore, where I suspect, looking at it from the outside, that you felt that you had a need in your role as Chief Scientific Adviser to intervene. Was that the case?

Professor Sir David King: Absolutely. In that situation, like everyone else, I was reading the papers about the development of the epidemic and I was watching it grow exponentially. John Krebs and I drew together a group of scientists who were involved in epidemiological modelling, virologists and veterinary scientists, and we began modelling the epidemic and it was very clear from our modelling that the control processes in place at that time were not going to bring the epidemic under control. From the modelling, we came up with a new control procedure and this was then backed by the Prime Minister. I think this is an example where challenge is important and, if you take a current example, it is on avian flu and the potential for a human flu pandemic, so again my role is to see that challenge occurs to government departments to see that whatever policies are being developed are fully robust and can take that scientific challenge.

Q25 Dr Turner: Are you now confident that all the scientific departments that do have CSAs in them now have the in-house expertise to be able to respond to such challenges that could occur unforeseeably in any department? Have they now got it? Are you confident?

Professor Sir David King: No.

Q26 Dr Turner: So you think there is work to be done?

Professor Sir David King: Yes. That is a very good question and of course I think there is an enormous amount of work still to be done. I think we have moved a long way, but this is a bit of a tanker that needs turning to get a full understanding of what the strength of scientific knowledge can bring to the evidence-based system.

Q27 Dr Iddon: I have been putting down a series of questions to the major state departments along the lines of secondments into the departments. I have been asking the departments, "Of all the secondments you are making into the department", and there are a lot of them in some cases, "how much scientific and technological expertise are you importing into your department?" Amazingly, the answers coming back, though I have not had a complete set of answers yet, but two or three answers are the same, that they do not measure that kind of thing. Do you find that astonishing that, when staff are seconded from other areas of the country into

15 February 2006 Professor Sir David King and Ms Sue Duncan

state departments, they do not measure how much technology and scientific expertise they are importing?

Professor Sir David King: I am not surprised at your discovering this, I am not surprised at all. It is a problem, but at the same time I think what have got to recognise is that the science advisory system within government only works by going out for expert information outside of government. There is within several departments, and Defra would be one, the MoD another, an enormous amount of scientific knowledge base within the department, but even there they are strengthened by going out to be challenged by the science base outside. Therefore, I think we can manage the process, despite what you are saying, by getting across the idea that it is seeking external scientific advice that is absolutely crucial, and here I mean social science as well.

Q28 Dr Turner: Do you have a view on the desirability of the three government departments who do not have chief scientific advisers? Do you think they should have chief scientific advisers or at least, in the case of the Treasury, perhaps technological advisers? We might not then have some of the problems that we have with the Revenue and tax credits if they had, for instance.

Professor Sir David King: After the foot and mouth disease epidemic, the Prime Minister asked me to see that each government department appointed a chief scientific adviser so that the quality of advice could be improved. He asked me to review the quality of advice in each government department on a regular basis and to see that each department had a science and innovation unit, and we are delivering on that. The Department of Culture, Media and Sport, for example, I think was somewhat resistant to the idea that they needed a chief scientist, but they are now in the process of appointing one. I think there have been battles on each occasion really.

Q29 Dr Iddon: I find it surprising that the Department for Education and Skills, which obviously has a very broad scientific and technological base, does not have a chief scientific adviser. Have you put any pressure on that Department to encourage them to appoint somebody?

Professor Sir David King: Professor Alan Wilson does play a key role in DfES, so, although he is not officially a chief scientific adviser, I think he does play that role reasonably well. Sue, do you know exactly what his title is?

Ms Duncan: No.

Chairman: Director General of Higher Education.

Q30 Dr Turner: Sue, what part do you play, as a sociologist, in overseeing the use in your science of the evidence base in government departments, like obviously the DWP and the Department of Health?

Ms Duncan: Like Sir David's network of chief scientific advisers, I have a network of the most senior social researchers within each government department. They have various titles, but it is usually something like 'Chief Research Officer' or 'Chief

Social Researcher', something like that. They are my main route through to departments and they are the people to whom I issue advice and guidance, written advice and guidance, and they, in their turn, come to me if they have specific problems, which they cannot take up themselves and then I can take them up on their behalf. I have regular meetings with my heads of profession, I also have a sub-group of my heads of profession, which is called the 'GSR Strategy Board', and we together set the strategy for the Government Social Research service. Those senior researchers within departments are themselves responsible for the quality of research within their departments. I get called in if they cannot deal with things themselves.

Q31 Chairman: Are you happy with the quality that is coming out?

Ms Duncan: Of research?

Q32 Chairman: Of research.

Ms Duncan: In some areas the quality is very good. In other areas we need to address that.

Q33 Chairman: Would you like to say an area where you need to address it?

Ms Duncan: I think one of the problems that we face is that, in the last five or 10 years, the Government Social Research service has grown very rapidly which means we have a lot of very inexperienced staff coming into government. They are both at the beginning of their social research careers and they are also not experienced in working in government and giving advice to policy-makers. Therefore, to address this we have established a competency framework which sets out precisely what skills we expect of our staff on recruitment and through the process of their career and we also provide guidance to them in the development of their career.

Q34 Chairman: But you have not answered the question—is there an area where it is particularly weak? It is across the board?

Ms Duncan: Well, there are two ways of answering that. What I was trying to get at was the fact that across departments there are a lot of junior staff. In terms of areas where the research expertise is weak, I would say, for example, the Health and Safety Executive which has only had a chief research officer for two years and they now have eight researchers, but they are still developing that relationship with policy and with the scientists in their department. Defra, in the various government reorganisations, was left with no social researchers. It is now in the process of developing its social research expertise and it now has a chief research officer and a number of researchers and it is still recruiting. Those are two areas where I would say there is still work to be done to make sure they have proper social science representation.

Professor Sir David King: If I can just go back very quickly to Dr Iddon's question, the Chief Scientist from DfES is John Elliott and he serves on the Chief Scientific Adviser's Committee. He is a social scientist.

Q35 Dr Turner: You obviously both get involved in the negotiations around the comprehensive spending reviews. Do you think that your hand would be strengthened if you actually had the Chief Scientific Adviser resident in the Treasury?

Professor Sir David King: We have had very good relationships with the Treasury, so both my personal relationship with the Chief Secretary, successive chief secretaries, and also with the civil servants who were given the task to work with us successively, Harry Bush and John Kingman, the relationships have been very good. Of course you might have noticed that the science budget has increased in successive years over all previous spending reviews, so the answer to your question is that I have no complaints in that area.

Q36 Mr Newmark: Should all departments follow Defra's example of setting up the independent Scientific Advisory Council?

Professor Sir David King: I think in many ways Defra has become an example of best practice for other departments in setting up the Science Advisory Council as an independent body. In placing the Chief Scientific Adviser, Howard Doulton, on top of the evidence-based policy advice system within Defra and in the way that he reports regularly to the Secretary of State, I think that Defra has become, as I say, a model of good practice.

Q37 Mr Newmark: Do you think it should become compulsory or not?

Professor Sir David King: Well, the word 'compulsory' implies that somebody has the power to step into different government departments and wave a wand. I am trying to do that.

Q38 Mr Newmark: In terms of the balance of these committees, do you feel that that is important?

Professor Sir David King: The balance of?

Q39 Mr Newmark: The committees themselves.

Professor Sir David King: The science advisory committees?

Q40 Mr Newmark: Yes.

Professor Sir David King: I think the point with Defra is that it emerged from the MAFF situation, so Defra has been a department very keen to put these things right, so I think the Science Advisory Committee in Defra, the membership, in my view, has been very good, drawn from outside, good people who have been challenging and critical. I think the same is really true of the other advisory committees that have been formed. I should say that the Ministry of Defence has always been very good at this, but the best practice from there has not always been spread around.

Q41 Mr Newmark: Do you feel that lay representation is important on scientific advisory committees?

Professor Sir David King: Perhaps I can answer your question by, for example, looking at the GM Science Review Committee that I formed to advise the

Government on the position on GM foods. We had scientists only on that group of 22/23 people. The major NGOs were asked to nominate scientists, so I included scientists nominated by the NGOs on the group, but it seemed to me only right that it should be a group of scientists who examine the scientific evidence and report on that. We did hold all of our meetings, and I think it was about 100 hours of meetings that I chaired on that, all of our meetings were held in public, so anyone could attend, but I do think that this is an issue where science advice needs scientists to hammer it out.

Q42 Mr Newmark: So, from a public policy standpoint, you see no benefit from having lay representation on them because it is science they are concerned with? Is that right?

Professor Sir David King: I think it would depend on the issue, so the Food Standards Agency, for example, which I think has done a tremendously good job since its inception, and again that really rose out of the BSE crisis, the Food Standards Agency does have a broadly drawn group of people on its board and even on its executive board, so I think there are situations where public, as consumer, and public, as lay people, do have a critically important role to play.

Q43 Mr Newmark: What method should be used to determine the weighting given to different kinds of evidence? I know you have alluded to there being certain cases in which pure science is involved and some which are more sort of public policy-oriented, so how does one balance scientific input versus lay input in these sorts of things? Is that important? Should we again be just focusing on really what the scientists have to say?

Professor Sir David King: I think it is very important. I think, for example, if you take the current Energy Review as a very hot topic at the moment, there are views of the scientists that are required as input in terms of the different forms of energy that can contribute to the energy requirement for the next 30, 40 or 50 years, but again the issue of public acceptability is absolutely vital, so I think in those discussions it is very important to engage with the public. So I have set up a Science in Society group in the Office of Science and Technology and within that we have developed something called ScienceWise, and ScienceWise is precisely a process of getting scientists together with lay people to discuss issues such as nanotechnology and whether or not there are issues the lay people see that scientists do not see.

Q44 Mr Newmark: Lay people, though, could be business people or people who are not necessarily pure scientists who can see the applications, for example on nuclear, and everybody comes with their preconceived views, and that is an issue I think we have to deal with. Science is seen as not infallible sometimes and I think from our Committee standpoint there is a perception that it is important that there may be a need to have committees of experts that are not necessarily just purely drawn from the science community.

Professor Sir David King: Let me answer by giving you two examples where I think this has gone very well. One is the therapeutic cloning discussion in the House of Commons and the House of Lords where the discussion was led by information from scientists but nevertheless the discussion within those two Houses was an exceptionally good discussion. Equally, I think the discussion last night on smoking. You know what the science advice is but then there is a question of public acceptability and changing the position on that. So I think when it comes to policy advice we have to recognise the importance of public acceptability, absolutely.

Q45 Mr Newmark: What evidence is there of the impact of the re-launched Council for Science and Technology? What impact has it had? Is there any at all?

Professor Sir David King: The answer is yes. The Council for Science and Technology draws together a group of people who, rather different to the former Council, include experts who can deal with health and medical issues, experts who can deal with issues of risk, and experts who can look at the whole wealth creation side of the equation. It has produced three very influential documents. Their meetings with the Prime Minister have certainly been effective, I think. The new Council is still in its early days but I do think it is already having an impact.

Q46 Mr Newmark: Sue, do you have much interaction with the Council for Science and Technology?

Ms Duncan: Not directly. It has social scientists on it.

Q47 Chairman: Do you ever sit on it?

Ms Duncan: No.

Chairman: Do you ever attend it?

Q48 Mr Newmark: Do you think you should be interacting with it, involved with it at all, or do you not see yourself having a role at all?

Ms Duncan: I think I trust Sir David to bring me in when he thinks I have a role there.

Q49 Chairman: That is a very diplomatic answer.

Professor Sir David King: The Council for Science and Technology is an external group. They are all drawn from outside government.

Ms Duncan: So I could not actually sit on it even if I wanted to.

Q50 Mr Newmark: How important are the research councils and their institutes in the provision of science advice to government? Is there a case for strengthening their input at all?

Professor Sir David King: The research councils are arms' length bodies from government and I think they are, rightly, jealous of that position, so that any advice that we receive through the research councils would be entirely on a voluntary basis. Now, having said that, I would not hesitate to ring up one of the chief executives of the research councils to ask whether that person him or herself would be able to

give me advice or can advise me on one of their own people to advise me. I think that we should not under-estimate the critical importance of the science advice we receive—social science, hard sciences—across the whole patch, from the science base as funded out into the universities and our research institutions. That is what is strengthening the evidence-based policy advice system.

Q51 Chairman: Could I just jump in there to ask you, Sir David, did you then in terms of NERC's decision to close some of its centres intervene to ask whether this was going to have an effect on science and, indeed, your ability in terms of being able to advise government, particularly on some of the those huge environmental research issues?

Professor Sir David King: I would always be rather careful to sit above the discussion. Any research council has to guard its independence but at the same time my views would be well-known to the research council.

Q52 Chairman: Did you give your view on those closures?

Professor Sir David King: I have discussed it with the chief executive but at the same time I respect the view that what might have been good for the research councils to fund in the past might not be good for the research councils to fund in the future, so they have to work within a finite budget and adapt their priorities.

Q53 Mr Newmark: Is there a role for learned societies in the provision of advice or not?

Professor Sir David King: Yes, and in particular we turn to the Royal Society, the Royal Academy of Engineers, but also the Institute of Physics and the engineering learned societies. We turn to them on a regular basis as well.

Q54 Mr Newmark: Moving further along the food chain then, what is your view on the role of consultants in all this?

Professor Sir David King: The role of consultants within government as a whole? No, I do not have a view except insofar as the scientific advice that I receive could be described as consultancy but it is given *pro bono*.

Q55 Mr Newmark: In my understanding, government does go out to hire consultants and almost outsource some of the advice that it gets. Should this information they get from consultants be used by government to analyse and collect evidence for policy making?

Professor Sir David King: I can only speak for myself, and I do use consultants, so for example in the reviews of government departments we use consultants—

Q56 Mr Newmark: You do not view it as having a detrimental effect on policy development? I am only going from some of the information I have read. There is a perception that people feel that consultants should not perhaps be used.

Professor Sir David King: I would go against that view.

Chairman: I wonder if we could ask Sue the same question because there is a very, very strong view, particularly in the social policy area, that in fact consultants are hired to give government the advice that it wants in order to affirm its policies. Is that a fair criticism?

Mr Newmark: Most companies that I know, being a venture capitalist, do the same thing. They hire consultants because they have already formulated a policy—

Q57 Chairman: Government is pure, Brooks, you must realise this!

Ms Duncan: To answer your question, no, I do not think it is a fair criticism. It is perhaps worth bearing in mind that on the social research side, most of our research is commissioned, so it is done by either academics, commercial survey organisations or research institutes, and some of it is done by consultants. We, in line with the rest of government, are committed to the tendering rules set down by the Office of Government Commerce so that when we are commissioning a piece of research we will invite a range of different research providers. As far as the advice that comes from that research, and by no means all research used by government is commissioned by them, it makes enormous use of available research council research of course, I think for the social sciences we actually have a good record drawing on academic expertise. You will know that a number of government departments have brought in academic experts. For example, the Department for Education and Skills has introduced several into the research advice on education for some years. I think the line that is taken broadly is that where advice is needed, we invite the best person for the job, and that might be an academic, it might be a consultant.

Q58 Chairman: Could I ask both of you whether you feel that, as a policy, research which is commissioned should in fact be published?

Ms Duncan: Yes.

Q59 Chairman: Sir David?

Professor Sir David King: Absolutely, except where there is a national security issue.

Chairman: Of course, yes, but that should be a principle we should set because I think that is one of the frustrations that the research is not published. Moving on, Evan, to the use of evidence in policy making.

Q60 Dr Harris: Before I do that, I was just struck by your expression “independent” scientific adviser. The Government says that you are there to give independent advice. This is not a criticism, but would it be fair to say that someone employed by the person they are advising could never be seen to be truly independent?

Professor Sir David King: Of course I am appointed by the Head of the Civil Service so I do not know if you are referring there to the Head of the Civil Service or the Prime Minister.

Q61 Dr Harris: I would like you to comment on whether you think you are as independent—let us take chief scientific officers within departments, who are not career civil servants, they are there on contract to that department, as a better example. They may give independent advice, and I am not suggesting they do not, but they could not possibly be described as “independent”.

Professor Sir David King: If I may answer your question in this way: partly as a result of the BSE crisis, followed by foot-and-mouth disease, both very expensive national crises, the position of the science advisory system within government had fallen in terms of public confidence, and so when I came into government the first documents I read were the Phillips Commission report into the BSE crisis, and it became absolutely clear to me that the Chief Scientific Adviser needed to establish that the science advice that was given was independent advice. The politicians can then make decisions on the basis of that advice, and they may choose to ignore it, but the advice system should be independent of the political flavour of the moment. So this means that I have positioned myself to gain the confidence of the public, but of course I also have to have the confidence of the political system, so my advice has to be given in a very careful manner. In other words, I really do have to make sure that the evidence has been very carefully sifted on all of the advice that I give. The advice is put into to public domain after it has been put into the political system so that there is always that cross-check. Now, I think the phrase “independent science advice” is contained in that description—that the science advice should not be driven by political convenience

Q62 Dr Harris: I was just questioning there could easily be a distinction made between independent adviser and advice, particularly in those circumstances. If I could give one more example. The Chief Medical Officer was in a position where he considered resignation when his advice, based on evidence, was not at that time (although last night clearly it was) followed on smoking in public places. Most people when they publish something and put something into the public domain and give advice, do not really have to think whether they are going to be able to pay their mortgage if it is ignored. That may be unavoidable, and it is certainly not a personal criticism, absolutely not, I think he was right to say what he said and say what he considered, but that clearly does mean that people in this position (which is analogous to ours and other scientific advisers) do have these other pressures on them. Do you accept that?

Professor Sir David King: Yes, but at the same time I do not believe that it is necessary to say that I would resign if my advice was not followed. In other words, I think the system is open to saying, “No, given other factors, we have decided not to follow that advice.”

Q63 Dr Harris: I think you are right, so long as it is clear that the advice was not followed. Coming to this question of the use of evidence, the question is your guidelines on scientific analysis and policy making—and we have had a look at them and they are, I think, well-received generally across the scientific area—is how far do you think they are being implemented? Other than your in-depth science reviews in the areas in which you are doing them, what mechanisms do you have to audit whether the guidance you are giving here is being followed?

Professor Sir David King: The main audit is the one that you have referred to, which is the reviews. In other words, government departments are very large bodies and the business of reviewing the advice system in government departments is a detailed process. What we intend to do is go into every government department approximately every three years, but each review is a six-month process, it is in-depth, and we will go fairly randomly through the process to see whether the advice system engages research and development, whether internal or external, that it is fit for purpose, that it is high quality, and whether the advice that is derived in that way does go through the advisory system. In other words, whether the advice actually gets to the minister. Without the review process, I think it would be very difficult.

Q64 Dr Harris: I think my colleague, Dr Turner, is going to ask you more about the reviews. I would like to ask Sue, if I may, how far are you aware that social researchers in government are aware of these guidelines and what can be done and what has been done to promote their implementation outside of these in-depth science reviews for social researchers?

Ms Duncan: I would be surprised if any of the chief social researchers were not aware of the guidance. As well as OST sending it out to departments, I sent it out through my networks as well, and one of the key challenges for researchers in departments is to balance that role between technical data collection and analysis and actually using that research to advise in the policy process. We have done a number of things to try and facilitate that. There was a report¹ produced by the Performance and Innovation Unit in, I think, about 2000 which actually pointed up this issue of using advice effectively within government on the social science side, both from the supply side and the demand side. What we have been doing on the supply side is spelling out to all social researchers within government departments what we expect of them in playing that quite difficult role between being a professional researcher and being an adviser on your area of research expertise, and particularly in developing training on communication skills, which both helps them to develop skills in communicating

technical information in a simple way and also helps them with that difficult role of knowing how far you can go with the evidence in those sorts of grey areas.

Professor Sir David King: Could I come back to your question just with an added comment, which is in setting out the new version of the chief scientific advisers' guidelines we made a full consultation through the chief scientific advisers' committee with all government departments, so it was not simply a top-down process, it was a process where the original guidelines had been implemented and we were now looking to improve them on the basis of practice in all government departments, so there has been feedback and the new guidelines have taken that into account.

Q65 Dr Harris: I have two specific questions on the guidelines. In paragraph 22 it says "experts"—these are experts from whom departments get advice—"should not be expected to take into account potential political reaction to their findings before presenting them." That is very sensible. Does that apply to advisers as well because it does not say that? Does "experts" include the departmental science advisers or only the experts who feed into the Chief Scientific Adviser, who feeds it on to policy makers?

Professor Sir David King: That particular statement refers to the experts and not the chief scientific advisers but I would say exactly the same applies to chief scientific advisers.

Q66 Dr Harris: You say in paragraph 14 that the "declaration of interests of experts could undermine the credibility or independence of the advice". Credibility as judged by whom? In other words, if someone is not credible with certain NGOs, is that sufficient, is that what is being meant by that?

Professor Sir David King: I think in a sense it could mean somebody who declares an interest through their business interests. My view—and let me try and be clear on this—is that if you were to take a position where "your interests are going to draw you into taking a position on this issue, therefore we cannot have you", you would end up removing a large number of the best experts in the country from many issues. So what we need to do is put out there for discussion—

Q67 Dr Harris: Agreed, yes.

Professor Sir David King:—exactly what those declared interests are, but once we have declared that, I think the position becomes a lot easier to deal with.

Q68 Dr Harris: You have not answered my question. My question is what is the threshold for credibility whereby you would say that the advice will be credible, because on that basis—

Professor Sir David King: It is a good question and I have yet to find an example that I could give you.

¹ Note by the witness: Cabinet Office (2000), 'Adding it up: Improving Analysis and Modelling in Central Government', available at <http://www.strategy.gov.uk/downloads/su/adding/coiaddin.pdf>

Q69 Dr Harris: Because you could argue that any scientist working full time for an NGO where it requires there to be concern about and opposition to a policy might fall into that category, but there are plenty of them on government bodies, for example?

Professor Sir David King: But if I take the GM Science Review, on that group there was an expert from the industry who knew the GM industry from inside and there were experts from the NGOs, so by knowing what the declared interests are, I think you can begin to balance the Committee out. As I say, I cannot give you an example where somebody was disqualified on the basis of this. I think the most important thing is having the declared interests.

Dr Harris: I agree.

Q70 Dr Turner: The science reviews that are carried out on different departments, have you got any generic lessons from these or are they all quite different?

Professor Sir David King: I think one generic lesson is that the existence of the science reviews begins to develop best practice in departments even before we arrive, so there are departments which might try and persuade me to delay the review because they want to put things right, and that in itself is not necessarily a bad thing. I think it is difficult to reach generic conclusions at this stage. For example, DCMS is the completed review and DCMS has this very large number of arms' length bodies that they fund, quite unlike any other government department, so looking for generic issues at this time is probably a little difficult.

Q71 Dr Turner: Your reviews encompass social science input into the departments as well, I take it?

Professor Sir David King: Yes, as I have said, Sue Duncan helps me in that.

Q72 Dr Turner: If you feel that a department is not taking your advice as an outcome of the reviews, what leverage do you have to persuade them? What did you have to do to DCMS to convince them that they should appoint a chief scientific adviser? Did you have to take them outside and kick them?

Professor Sir David King: The answer to your question is that, in effect, the Treasury is very interested in the process that we are going through. In other words, the Treasury is of course keen to see that there is good value for money in the advice-driven process, and so when we look at the spending review it includes the funds required for the R&D base to improve the science evidence for each government department, and the Treasury now works with my Office on each of those spending review applications from government departments where science and social sciences are included. So in other words, there is a financial factor that, as you might imagine, is quite an important factor in all of this. The Treasury is one important element, but of course the second element is that the drive comes from the Prime Minister to improve the quality of the evidence base.

Q73 Dr Turner: Have you encountered any need to encourage cultural changes in departments to properly accommodate scientific input? I suppose I can think of DFID as a potential type of example to which you might want to refer.

Professor Sir David King: Absolutely. When I talk about the "tanker being turned around", I am talking about a culture change in which the notion of science advice being relevant to a wide range of topics is not always present in government departments and I would say has been rather thin in the past. In other words, science has been seen to be a very small part of the evidence-based advice system and we are simply saying actually there are few areas where the science knowledge base does not impact on improving evidence across the system. So I think that is a culture change.

Chairman: We are going to move on to Adam Afriyie who has been very patient sat there.

Q74 Adam Afriyie: It has been fascinating, I have enjoyed every moment but I am slightly worried because right at this moment there is a risk that the ceiling may collapse and we may all be horribly injured in the next 10 minutes. Do you think we should clear the room?

Professor Sir David King: You are telling me that there is a risk that this ceiling might collapse?

Q75 Adam Afriyie: There is a risk there. There is a risk that it may happen in the next 10 minutes. What I really want to bring us on to is the subject of risk and the perception and the communication of it, because, as you can see, it is quite an alarming if communicated ineffectively or in a deliberately excitable fashion by the media. My first question really is do government departments have sufficient expertise in risk assessment and do you have measures that you use to fathom whether or not they are achieving those standards or that expertise?

Professor Sir David King: Let me first say that, as you probably know, the Treasury leads on managing risk. It has the managing risk framework and I am sure you will ask the Treasury about this. May I quote from the Prime Minister's speech of 26 May 2005. He said in his speech on Risk and the State: "We cannot eliminate risk; we have to live with it and manage it." I think this is your point about the ceiling falling down. I would say that most of my work is in the category of managing risk. If you take the tsunami, in that post-tsunami period it was a matter of looking at risks around the world from natural disasters and how we can manage them.

Q76 Adam Afriyie: In the government departments do you feel that there is sufficient understanding of not just the risks or sufficient expertise to assess those risks, but also the ability to assess them consistently across the various government departments?

Professor Sir David King: I think the quality of practice varies from one government department to another. I think you are quite right to raise it, but

15 February 2006 Professor Sir David King and Ms Sue Duncan

this is precisely why the Prime Minister made the speech on this because we want to raise the profile of the quality of risk analysis and risk management.

Ms Duncan: Perhaps I could just come in there, Sir David. The Treasury does provide a framework guidance which is used by departments which sets a clear structure on how they appraise risk, and that is used by departments.

Q77 Adam Afriyie: And it would seem to me that everybody perceives risk. In the social sciences there is also the concept of stress and stress caused to people and whether it is internally generated or whether it is a reality of the environment. When it comes to risk it seems to me that surely it would be fairly straightforward to create a standardised table of risks that people understand in their daily lives so that when something is communicated, it is compared to something which people generally understand. That is one way of keeping a consistent way of communicating risk to the public. Is there a table like this—you have alluded to something similar in terms of the assessment of risk, Sue—but is there a table like that that could be used when communicating the risk of certain outcomes taking place?

Professor Sir David King: The best table along this direction is really produced by the life insurance industry in terms of the added risk to yourself of different lifestyle habits or occupations. Again, if I may refer to that vote last night, smoking is absolutely at the top of the list of risks, so a life insurance agency will ask you just two questions: Are you male or female? because females outlive males, on average, and Do you smoke? because the risk to your life from smoking is so far above all the other major risks that we face. So, yes, the tables are there but the risk perception, as we all know, is that if there is an accident on the road and several people are killed, there will be zero publicity attached to it, but if there is a rail accident, there will be a large amount of publicity attached to it. So the focus goes on dealing with risk on the rail rather than the road.

Q78 Adam Afriyie: Can I just confirm, is there a consistent method across government departments to assess risk which is used in a standardised way across all government departments? Does that sort of methodology exist and is it being used?

Ms Duncan: That is the Treasury appraisal guidance which I mentioned earlier. You pointed to the issue of the communication of risk and there are five principles set out by the Chancellor which underpin the approach to risk. One of those is public involvement. To support the guidance issued by the Treasury, the Head of the Government Communication Service has also issued guidance for departments to follow in communicating risk and it is very much a recognition of the importance of how that is communicated to the public which is an important element of it.

Q79 Chairman: We are hopelessly unsuccessful, are we not? The *Daily Mail* is far more successful in communicating risk than the Government is?

Ms Duncan: I think I would say it depends if you want a real communication of risk, a balanced communication of risk or—

Q80 Chairman: My point is we are not getting it right, are we, because clearly what we are seeing in the media is often a distortion of the level of risk, which is the very point that Adam began his line of questioning with. That is a comment rather than a question.

Ms Duncan: I think probably if you had a Treasury person in front of you they would agree we are still learning how to communicate risk. Similarly, I suspect that Howell James would say the same thing. It is an area that we need to do more work on and I think that is recognised.

Professor Sir David King: Could I just add on the risk issue that at the Prime Minister's suggestion, Howard James, Liam Donaldson, myself and John Hutton did do a series of visits with the media discussing how they might manage risk. This has been very much a focus of our attention—the way the media actually determine what the public perception of risk is.

Q81 Dr Harris: With regard to that point, it was led by the Chancellor of the Duchy of Lancaster, there was something in the *Independent* about it, and indeed there was an interview with the then Chancellor of the Duchy of Lancaster saying you had done what you have just said and talks with newspaper editors would follow, but nothing has been heard since. Do you think the failure to replace John Hutton has meant that that initiative has ground to a halt or has some other Minister unbeknownst to us anyway taken on the reins?

Professor Sir David King: I have certainly continued the action myself so I have since then had a meeting with the editor of *The Guardian* and his full editorial board talking about the issue of risk. As a matter of fact, if you are asking for an outcome, I do believe that there is a perceivable change in *The Guardian's* handling of these issues. *The Guardian* has now included science issues covering a whole range of activities. If you look at their pages, they not only have a page on science in the main body of the paper but they are trying to include science advice on many of the issues of current debate. So that is a difficult part of your question, Dr Harris, which is the real outcome that we want to see is a change in the way the *Daily Mail* handles risk. That is quite a tall call but that is what we were trying to achieve.

Q82 Dr Harris: Perhaps the *Daily Mail* should be your next lunch!

Professor Sir David King: I am not sure I am going to manage that one.

Q83 Dr Harris: Do you see that you have a role or that scientists within government have a role correcting things that are just wrong about policy and risk being set out? Should there be more letters to newspapers? Should when Members of Parliament sign ridiculous early day motions about how we are all going to die from mobile phone masts

we be getting more advice from people in the know? Should you say, "My report did not say do not put a mast near a school," which it did not, which everyone who signs these things thinks it does, for example?

Professor Sir David King: I think my role within government is clearly different from the role that you are referring to now. The Parliamentary Office of Science and Technology should be performing that role and I think they do rather a good job.

Q84 Dr Harris: With regard to risk, can you give the Government definition of the precautionary principle?

Professor Sir David King: I am going to be given a definition. It states that "When there is reasonable suspicion of harm, lack of scientific certainty or consensus must not be used to postpone preventative action."

Q85 Adam Afriyie: That sounds very unscientific.

Professor Sir David King: That is what the precautionary principle states.

Q86 Dr Harris: Can I just ask where that comes from? Is that your own formulation?

Professor Sir David King: Absolutely not, no!

Dr Turner: It is a lousy definition.

Q87 Chairman: What would be your definition then, Sir David?

Professor Sir David King: I am quite careful always to refer to a precautionary approach because I think it may be unscientific to refer to this as a principle. There are all sorts of principles in science and the precautionary approach is, I think, a sensible approach in which the risks are analysed as best we can. What we cannot do is freeze ourselves into total inaction on the basis of all the unknown unknowns. I think we have to always weigh up potential advantages and disadvantages, but a precautionary approach is exactly what we used in the GM Science Review, and you will find that there is a chapter in that GM Science Review which is the most detailed analysis of GM yet published in which we take the precautionary approach and spell it out.

Q88 Dr Harris: But the anti-GM people say they take the precautionary approach, so we are no better off unless there is a clear definition of precautionary approach. Similarly, business would like the European Union, the European Court of Justice, to be consistent, I guess, because otherwise one never knows whether one is breaching a precautionary approach or principle as it is set. Is there a role for the UK Government to issue a clear description of what it considers to be the precautionary approach which can help the courts where there is litigation and also to influence the European Union, which has a jumble of case law now with multiple definitions of precautionary principle which are contradictory, in fact?

Professor Sir David King: Dr Harris, I think you are seeking clarity where clarity may be very difficult to give because it will be used by those who claim they

know what the best position is. I think the only answer to this is to look at the detailed scientific analysis. When I say we used the precautionary approach in the GM Science Review, the approach was taken that any advice we gave on GMs that would be acceptable as crops to grow in this country and would be acceptable for people to eat, should have been through all of the carefully scientifically regulated process that we could come up with. Now that was our conclusion, that this is a reasonably good approach to applying precautions, but if we claim that we understand a principle, then we could always say there are enough unknown unknowns to prevent us ever from doing anything new from science and technology. So my worry is that those NGOs who are trying to use this—and many of them are absolutely right in their use of precautionary approach—is when they turn it into a principle and say, "We are the determinants of whether this principle is being applied or not, then we go into a non-scientific approach."

Q89 Dr Harris: I accept that we will never get that clarity, but is there anything more the Government can do to help resolve what I have said to you is a complete disjunction of understanding of what this can mean? Is there merit in there being some work done to promulgate what the approach should be and the fact it should not be distilled down into a principle, even an agreed one?

Professor Sir David King: I have to repeat that evidence-based policy advice is what we ought to be seeking.

Q90 Dr Harris: On the question of the evidence base, are you confident that departments are taking into account, when it comes to risk, evidence before issuing policy? Let us take a recent example of the Department for Education and Skills seeming to decide now that the risk from someone who has ever looked at pornographic pictures of children is such that they cannot ever be employed in a school as a rule, and that obviously has implications for the human rights and the income of the people concerned. Was there any scientific evidence sought or obtained about what the risk was to underpin that decision or do we just sail on without doing that because it is a difficult issue?

Ms Duncan: The answer is I do not know on that specific example, but perhaps if I could tell you how the system works to ensure that evidence is included in the process of policy making. All major new policies have to go through what is called a Regulatory Impact Assessment. That is overseen by the Better Regulation Executive in the Cabinet Office and each department has its own departmental unit to oversee the process. That covers a range of issues, including the evidence that supports the policy, cost-benefit analysis, and things like setting out the arrangements for evaluating policy once it is implemented. There are a number of other things in the RIA and that also is a way of looking at risk; but that has to be addressed in Regulatory Impact Assessments.

15 February 2006 Professor Sir David King and Ms Sue Duncan

Q91 Dr Harris: You would expect the Education and Skills Department to have had all that before promulgating a policy of life bans in the way that they did?

Ms Duncan: In the early stages of advice to ministers, they would be bringing in that advice. When the policy decision is made that would be the time the Regulatory Impact Assessment would kick in and it would exist throughout the life of the policy.

Professor Sir David King: I think we would both say that the advisory system would fail if there was not the evidence produced to back up a decision, but at the same time of course the decisions may go against the advice.

Chairman: Provided that is clear, then at least there is a rationale to it. It is when the advice seems to be very clear in terms of the research and there is no evidence to say why the Government entered the decision. We are going to move on from there if it is okay and bring in Jim Devine.

Q92 Mr Devine: Thank you very much indeed, and I am very glad you have got a magic wand because I have to disappear in 10 minutes! Do you monitor how many consultations meet the Cabinet Office guidance on good practice? We have been advised that contrary to the guidance, departments are not allowing a 12-week consultation period or publishing proper feedback on how the consultation input has been used for policy development. I just wonder about the consultation periods.

Ms Duncan: As you have said, the consultation guidance is owned by the Cabinet Office and they oversee that guidance, but it is for departments to decide how they implement that guidance. I do not know the guidance in detail but I do know that it does allow, under certain conditions, departments to break with that time period if there is a very clear reason why.

Mr Devine: Can you give me an example?

Q93 Chairman: And do you know how many times they do break it?

Ms Duncan: No, I do not, but I can get the information from the Cabinet Office which I can send to you. My understanding is that they do not any more monitor the way departments implement the guidance.

Q94 Chairman: So there is no point in having it really?

Ms Duncan: Well, I would not say that. I think it sets out clear expectations.

Q95 Mr Devine: Prior to becoming an MP, I worked as a full-time officer with a health union, and there was a lot of cynicism about consultations on changes in health because there was a perception amongst the public that decisions had basically been taken beforehand and that the consultations are a sham. I wonder how you would respond to the criticism that sometimes policies bear very little resemblance to the key messages of the consultation?

Ms Duncan: I think across departments we have been doing an awful lot to go beyond the formal consultation paper so that departments are developing more informal methods to include the people that would not necessarily respond to a formal consultation paper. Within my own professional area of expertise, we are adapting the methods of social research to aid in the consultation process. So, for example, departments have run Citizens Juries which enable lay people to be involved in the whole process of consultation, and it both provides them with expert advice within whatever area they are consulting on and it helps them to express their views in a more informal way. If you look at the Policy Hub² site which is run by the Cabinet Office, there is a whole range of examples of different ways that departments have used to try and address that whole issue where conventional consultation has gone to a specific group of people. I would not say that we have got it completely licked, but I think we are working on it.

Q96 Mr Devine: Could it be the case that scientists are unrealistic about the influence they have on policy? Does it mean that such policies are not evidence-based?

Professor Sir David King: I think that, in a way, comes back to the very general questions before, to what extent are we being successful in providing evidence-based policy advice, but when decisions are made—and I just repeat this—by ministers, it may or may not follow that advice. My experience is that the practice of advice being followed where I have been involved directly has been very good.

Ms Duncan: I think sometimes it is followed; sometimes it is not. I think the important thing is that the advice is set clearly in front of ministers so that they can make the decisions on the merits of the advice, and we have to be sure that we are presenting them, where there is a range of opinions and where research does not come up with black and white answers (which it often does not, particularly in the social sciences) that we present them with the clearest possible guidance on what the research as a whole says. We have been working very actively within the last couple of years to encourage departments to use the techniques of systematic review, which were first developed to present conflicting medical evidence and are now being used for the social sciences, so that we can say in a broad area, where research sometimes conflicts or does not give a clear answer, what we actually know and what the implications for policy are and what degree of certainty that advice can be taken to have.

Chairman: I would like to bring Adam in here.

Q97 Adam Afriyie: Sir David, I have been to one or two of your presentations on climate change and they are fantastic, really excellent stuff. I sometimes see you on television—sometimes. When you are speaking on the television or when you are speaking to the media, who are you speaking on behalf of and what are you seeking to achieve?

² Note by the witness: <http://www.policyhub.gov.uk>

Professor Sir David King: I am speaking on behalf of the advisory system within government, as when I speak on climate change around the world as well. I think that I would also have to say, though, that there has been a real task in terms of explaining carefully the science underlying the Government's position on climate change. So given that I put the evidence before Government in the first place, it then becomes quite apparent that that evidence needed to be put out into the public domain.

Q98 Adam Afriyie: And do you think by putting it out into the public domain directly yourself that then influences and places an additional pressure on the Government or the ministers to actually take it more seriously?

Professor Sir David King: I think that may well be a follow through, yes.

Q99 Adam Afriyie: So that is the media involvement. What is the primary role of public engagement? In terms of public engagement in evidence-based policy development, what is the primary role of that public engagement? I will give you some examples. Is it to allow the public to shape the direction of the policy, inform the public about the issues, or to make the Government aware of public concerns? What is the basic intended role of public involvement?

Professor Sir David King: Let me give you again the GM science debate as an issue where I believe it is fair to say that the United Kingdom has lost a wealth-creating opportunity. In other words, we had several major companies that had invested very significantly into research into modern GM foods. Those investments have now been dropped effectively to zero, and this is because the public has decided that they do not want GM foods on the supermarket shelves. So the GM Science Review that I headed up, which was, as I have said, a group of scientists drawn broadly, but nevertheless a group of scientists who produced a review, has not actually been followed through by public acceptance. I think the public position of scepticism is probably related to the BSE crisis; we cannot trust on foodstuffs.

Q100 Adam Afriyie: So you would see part of the public engagement to do with persuading the public?

Professor Sir David King: Part of the public engagement is to taken an issue ahead of time—and nanotechnology is an exemplar of that—and engage with the public, which means listening to their worries and concerns. The ScienceWise process is not simply saying, “This is what the scientists say,” it is saying, “This is what the scientists say and what is your response to that?” And we take that on board in order to formulate a policy of regulatory systems in which we can benefit economically from developments in nanotechnology and the public can develop an assured position on the product.

Q101 Adam Afriyie: But my observation of consultations is that they tend to raise the expectations of the people involved. A very brief example in Windsor constituency of knocking on doors, there is a lovely old lady who lives in central

Windsor and she said, “Could you come and help me? My eyesight is failing”—she was in her mid-80s—“I have got another consultation document on the development of some flats a bit further down the road.” I think this was her fifth document and she had spent hours filling these things in, and I knew, as well as most of us know as MPs, that the result of that is generally zero and what is going ahead is going to go ahead in any case. So do you think that you are managing the expectations correctly of the people who are involved in public consultations and you are not setting them up for a fall?

Professor Sir David King: I think we are in a very different place when we come to talk about the issues I am discussing compared with the one you have discussed because here we are saying it may well be that the Government, as in the case of GM, will say, yes, these products have been through our detailed analysis, they are safe, but the public still says we do not accept it. In the case of nanotechnology, we are simply saying let us get ahead of the curve so where the Government is and where the public is is more likely to be in the same place.

Q102 Adam Afriyie: My final question is in the interests of transparency—and you seem to be a very open Chief Scientific Adviser and you were praised very highly by Lord May, who is a live wire but I think he has got a good instinct. Should it not be compulsory for departments to publish their expert advice?

Professor Sir David King: That is an issue that I would not really want to comment on. I think we all know the problem that obviously it is important for me to put my advice into the public domain because of the need to get public confidence that what I am doing is not being politically driven, but there is another discussion and argument to be had about the freedom of discussion within government and how much that might be impaired if everything was placed in the public domain, so I think there is another decision.

Dr Harris: After the decision is made, what about making it compulsory to publish two things—the scientific advice upon which it is based, not necessarily the advice but the evidence upon which the advice was summarising and also a statement of the strength of that evidence, like they do in the medical field now because everyone keeps saying there is evidence and it is a very poor evidence base. You have got to be able to distinguish that from something where there is good evidence. On those two points, would you agree that there is a case for publishing the—

Adam Afriyie: And also in the social sciences.

Chairman: I think you had already agreed that. The advice is more tricky but it would be useful. Could we ask you to reflect on whether, in fact, once a decision is made by Government that the advice which was given, which might be in conflict with the evidence, is published, and perhaps you could write to us on that?

Dr Harris: My question was also about the extent of the strength of the evidence.

15 February 2006 Professor Sir David King and Ms Sue Duncan

Q103 Chairman: That would come in the advice.

Professor Sir David King: That would certainly come in the advice. We are back to saying we cannot reduce risk to zero, we have to manage risk, so, yes, that implies that we have to state the strength of our understanding.

Chairman: I am trying in about three minutes to wrap up this session, so, Brooks, can I just move you on.

Q104 Mr Newmark: How effective is horizon scanning in areas relating to science at the moment? How do you respond to criticism that the Government has been slow to identify a need for scientific input in legislation, and an example of this might be the Human Tissue Act?

Professor Sir David King: I have already stated that I run the Government's Foresight programme and within the Foresight team I have now set up a centre of excellence for horizon scanning and within that centre we are assisting other government departments, through training, to improve the quality of horizon scanning across government departments.

Q105 Mr Newmark: What does horizon scanning mean to you, in layman's language?

Professor Sir David King: Quite simply—and if I may come back to the foot-and-mouth epidemic because I think it is easiest to explain it in particular terms—we had a foot-and-mouth disease epidemic in 1967 in this country and the lessons learned were placed in a document for the Ministry to use if it should ever happen again. They dusted them over and applied them immediately in 2001. However, between 1967 and 2001 some major changes in farming practice had occurred. In particular, farmers were now sending their animals from one farm to another through the lifetime of an animal and often

to markets in between. In other words, before slaughter and going to the table, an animal might go through three or four different farms, which means that the animal movements around the country had changed dramatically, so whereas in 1967 the outbreak was confined largely to one region of the country, in 2001 it had been nucleated throughout the country through this animal movement. That was something that I believe horizon scanning can pick up if it is done properly. In other words, you horizon scan for changes in practice which might affect the way you would manage a situation like that.

Mr Newmark: I will not come back to you.

Q106 Dr Iddon: For Sue Duncan please; you have heard that the OST have set up a centre of excellence in horizon scanning. Why have you not set up a similar body to cover the sphere of influence that you are interested in?

Ms Duncan: Because the horizon scanning centre within the Office of Science and Technology also addresses the needs of social sciences. It goes across the board and I think that is actually its strength, that we look at science and social science together. There are good examples already of us working together with the horizon scanning centre in ensuring that we are anticipating future problems and issues.

Dr Iddon: I cannot beat that answer. Thank you.

Chairman: Can I say thank you both very much indeed, Sue and Sir David, for this session. We do have quite a series of questions which we have not asked you, particularly about evaluation, and I would be very grateful if we could write to you with those to try to get a response on those, which would be most useful. Thank you very much indeed for a very, very interesting session and thank you to my Committee. The Committee is adjourned.

Wednesday 10 May 2006

Members present:

Mr Phil Willis, in the Chair

Adam Afriye
Dr Evan Harris
Margaret Moran

Mr Brooks Newmark
Bob Spink
Dr Desmond Turner

Witnesses: **Dame Deirdre Hutton**, Chair and **Dr Andrew Wadge**, Director of Food Safety Policy and Acting Chief Scientist, Food Standards Agency, gave evidence.

Q575 Chairman: Good morning everybody and welcome to this session which is part of our broader inquiry looking at scientific advice to government, how government gets its advice and whether it acts upon it, how it assesses risk and we particularly welcome this morning Dame Deirdre Hutton, the Chair of the Food Standards Agency, welcome to you and to Dr Andrew Wadge, the Director of Food Safety Policy and Acting Chief Scientist, which is a mouthful, but you are very welcome too, Andrew, to our Committee. Can I say that we are particularly pleased to have you in front of us this morning because the Food Standards Agency comes with an excellent reputation in terms of the way in which it does handle advice and the way in which it presents advice to the Government and to the public at large, so we are very, very pleased to have you. Why do you think you have got such a good reputation and is it deserved?

Dame Deirdre Hutton: Well obviously it is, yes, is the place to start. I think there are several reasons for it. I should say first that I think the Agency bases everything it does on science, and on sound science, but alongside that at the same time as we are assessing the science we also talk to a whole range of other stakeholders, so that process of collecting the science, talking to stakeholders about their appetite for risk, is a process that goes on simultaneously, so it means that we are getting, as it were, a sense from both sides, so from the science we get what the risks are and where the uncertainties are and alongside that we talk to the public, so I think it is a combination of good science and absolute transparency. If I think about the past, I think the thing that the Agency has brought that is new and I think has helped that reputation is the absolute transparency with which we operate both within the board, the staff, but also within the independent scientific committees, so we are seen to base it on science, we are seen to have good independent science, we talk to the public, we come to a view and it is all done in the public domain and I think that is probably the basis of it.

Q576 Chairman: Would you agree, Andrew?

Dr Wadge: Very much so, and I think it is interesting to compare and contrast with how it was. I used to work in the Department of Health before moving into the Food Standards Agency and I worked on food along with colleagues in the Ministry of Agriculture, Fisheries and Food and I think that the policy there was to conduct science and then put the science out into the public domain and then very much retreat behind the barricades, whereas the

approach now is very much discuss and engage with stakeholders and with the media right the way through the process, even though sometimes that can be quite uncomfortable, in the long run it leads to greater understanding of our position and what the science is saying.

Q577 Chairman: I will come back to that later because we want to explore that with you. You have just recently been appointed; what would be the difference between your approach and that of Sir John Krebs, because you are not a scientist?

Dame Deirdre Hutton: I am not a scientist, no. I think several things have happened in a sense since I have been there and I will come back to the "I'm not a scientist". First of all, if you are going to have a sound scientific base as the fundament of your organisation then all the processes within the organisation need to be directed towards that, so I am not a scientist, but nor do I think that science should somehow be held by one person and that one person should somehow be it, so what we have done in the last little while is put a huge amount of effort into developing what, in a general sense, we are terming scientific governance, so that has been about looking at the way in which science is governed throughout the Agency in terms of the collection of evidence, the use of evidence, for example, it is about the science strategy, which Andrew knows about in great detail. It has been about best practice, working with our nine independent scientific advisory committees. The operation of openness that I was talking about and indeed the appointment of Andrew as Acting Chief Scientist, which we initially did partly because our last Chief Executive was a scientist and we felt we wanted to separate the role of Chief Scientist from Chief Executive because, it seemed to me, there was conflict of interest there.

Q578 Chairman: I will return to that issue, but I really just want to explore with you what is going to be different between you and Sir John Krebs?

Dame Deirdre Hutton: I think what is different in a sense is that I bring a different set of skills.

Q579 Chairman: What do you bring then?

Dame Deirdre Hutton: What I bring is a very considerable experience of regulation and how you work regulation in a contemporary world. I have worked with the Financial Services Authority as Deputy Chair for some considerable time and I was on the board before that and I have also worked with the Better Regulation Task Force, now Commission, so I bring a very broad regulatory

10 May 2006 Dame Deirdre Hutton and Dr Andrew Wadge

experience, I bring very broad experience of consumer policy and I have worked on and off with the food industry for a very long time so, you know, there are a range of skills that you need to make the agency work and I think those are the ones that I bring, but of course because that is what I bring, I have been very keen to offset the ones I do not bring by making sure that we have good processes for science within the Agency because it needs to continue absolutely to be based on sound science.

Q580 Chairman: Can you manage without a scientist at the helm, Andrew?

Dr Wadge: I would not like to suggest that the only reason that we managed in the past was because we had a scientist as a Chairman. What we do have in the Agency is about 40% of our staff are scientifically trained. There is no separation between the policy divisions and the scientists, so scientists are integrated in the policy work, so all policy work within the organisation is done by people trained in science alongside administrators and what is key in terms of getting the science right is making sure that there is someone overseeing that and that is why the organisation has appointed a Chief Scientist to make sure that the scientific processes are correct, to act in a representational role for the Agency with Whitehall, with the outside world, with the academic community, with the media and also to ensure that there is a head of profession role for the scientists within the organisation to make sure that we are recruiting the right people, that they are developing the right skills and maintaining their expertise and competencies and that we retain the very good people within the organisation.

Q581 Adam Afriyie: Dame Deirdre, you have separated the role of Chief Scientific Adviser and the Chief Executive, that must be a reflection of something that was unsatisfactory in the past; what was that?

Dame Deirdre Hutton: I think it is simply a new Chairman come with new insights and new reasons for doing things and I reflect also on my experience in financial services that when you had the Chief Actuary as Chief Executive it led to problems and there was a conflict of interest. I do not think there had been any actual problems in the Agency because of that joint job, but I did feel quite strongly, as did the Deputy Chairman, and she had started the process before I got there, that it was right that those two jobs should be separated. The Chief Executive has the role of balancing various things that happen across the Agency and various interests which are both practical as well as scientific and we believed very strongly that we needed a Chief Scientist who could focus absolutely on the science, making sure it was robust, being a champion of the profession, who could also, at times, because he was senior enough in the organisation, put his hand up and say, "Hang on a minute, you are not doing this right".

Q582 Adam Afriyie: That function was missing beforehand, this is what you are saying?

Dame Deirdre Hutton: That is my perception, yes, but then I think, and it goes back to the point the Chairman made, I think a lot of the offset of that was done through having Sir John Krebs as Chairman.

Q583 Adam Afriyie: In due course will you be appointing an external scientific adviser or is this it now?

Dame Deirdre Hutton: Andrew, as we said at the beginning, is Acting Chief Scientist so from that you can tell that we are going through a process of developing the role and thinking about it, but I think there are a couple of things that we are thinking about, because I am not going to give a straight answer to your question because we have not got there yet, but I would point out that we have nine independent scientific committees that advise us which involve about 140 scientists who are external to the Agency who are there as an independent source of advice to the board and internally, so we have got an awful lot of independent external science coming into the Agency already and I think that slightly changes the balance around what it is you might actually need in Chief Scientist.

Q584 Adam Afriyie: Does the role of Chief Scientific Adviser in the Food Standards Agency differ in any way from the other departmental Chief Scientific Advisers?

Dame Deirdre Hutton: I am terribly sorry, I find that quite difficult to answer, I do not know enough and I think it might be helpful if Andrew answered that.

Dr Wadge: I think it does. There are a number of similarities, but I think the main difference will be the point that Dame Deirdre has just said that we have these nine independent scientific advisory committees who are very specialist experts in areas of microbiology, toxicology, nutrition, who are there with a role of bringing that independent advice into the organisation. In addition to that we have contacts within all of the different research bodies, the royal societies, where, if there are particular problems where we need very rapid advice, we have the opportunity to bring expert advice in on an ad hoc basis, so I think that it is different in the sense that we have this network. I think the similarities in the roles are around representing the importance of science within the organisation and around the head of profession role that I mentioned earlier.

Q585 Chairman: Could I just ask who actually appoints the people to these committees, how do these so-called experts get on these committees?

Dr Wadge: I mean it is all done under the Nolan procedures, but they are appointed by Dame Deirdre. Some of the committees are jointly run with other departments, some of them are jointly run with the Department of Health, the committee on nutrition, for example, SACN, is jointly appointed by Dame Deirdre and the Chief Medical Officer.

Q586 Chairman: They are appointed, they are not in any way openly advertised?

Dame Deirdre Hutton: Yes, they are, it is done through Nolan procedures.

Dr Wadge: Through Nolan procedures, yes.

Q587 Adam Afriyie: You are new in your job, what are your key challenges?

Dr Wadge: My chief challenge is to build on the work that we have done on establishing the Agency's reputation for basing its policy on sound science and to do that I want to raise the profile of science within the organisation. I particularly want to focus on the head of profession role around competencies and skills of the staff within the organisation and I think as well I want to make sure that, I think there is a tendency, no matter how hard you try, you may be getting the science right, but your external stakeholders may not see the process by which you have reached your conclusions all of the time and I think that although we work very hard on transparency and openness, I think that there are challenges for us to do even better.

Q588 Adam Afriyie: How many days per week are you working?

Dr Wadge: I work four days a week within the Agency as Director of Food Safety and as the Acting Chief Scientist.

Q589 Adam Afriyie: About 50/50 two days a week on one and two days on the other?

Dr Wadge: I would say it was more three days a week on the Director of Food Safety and one day a week on the Chief Scientist role.

Q590 Adam Afriyie: One day a week, do you think that is enough?

Dr Wadge: Well I think that what we are doing at the moment is we have set up a project board within the organisation, we are in discussion with the Office of Science and Innovation about the role and we are in the process of developing the role, what exactly it involves, what sort of support we need, and I think that those sorts of issues will come out of that project management work that we are doing.

Q591 Adam Afriyie: On one day a week you are also looking to produce a new science strategy, I am not quite sure how you will fit it in with the timing, but what specific benefits do you see from the new science strategy that you are working on?

Dr Wadge: I should say that I am not the only person there working on issues such as the science strategy.

Q592 Chairman: No, we have gathered that, Andrew.

Dr Wadge: Science strategy actually will be published later this month and I believe that you have seen a copy of that, if not we can provide you with that. That is a process that we have put together, we have been very specific about our strategic planned targets and what science we need to meet those targets, so it is very much about saying, "Here are the policy aims of the organisation, what science do we need? What is the process? What sort of information do we need to do that? How are we going to go about getting it?" In that process we have consulted very widely with our scientific committees,

with the outside world, to a large extent with the academic community and we have taken on board a lot of comments around that, so I would not like to give you the impression that it is just me, there is quite a large team of people within the organisation.

Q593 Adam Afriyie: And in the new science strategy, you did not have one before, you have got one now, what will be the difference between the past and when this new strategy is in place?

Dr Wadge: I think the main difference is a very specific focus and link between our strategic planned targets around food safety, around choice, around diet and health and what science we actually need as an organisation to meet those very challenging targets we have set ourselves to reduce food borne disease, to improve dietary health, to increase consumer choice, what sort of science do we need, what is the best way of getting that science, how do we interpret that science once we get the science and how do we make sure that it then influences policy and, finally, how we evaluate it at the end of that?

Q594 Adam Afriyie: The final question. What safeguards do you have in place to ensure that you have sufficient in-house expertise in social and natural science to be an intelligent customer and communicator of scientific advice?

Dr Wadge: It is absolutely true to say that as an organisation when we were first established in 2000 we were largely focussed on the natural sciences, but we have been very specific in our strategic plan about the need to do more work on the social sciences and in the course of recognising that we have held with the Royal Society a meeting last September on social sciences. We held a seminar just two weeks go with leading social scientists from across the academic community to identify how social science can influence the work that we do, but also during the last few years we have been recruiting economists, operational researchers, people working on consumer attitudes and consumer science, so we are starting to recruit people from the social science world as well as engaging more.

Q595 Adam Afriyie: And how are you monitoring or measuring the outcome of these changes or of this input?

Dr Wadge: I think that the way that we monitor all of our science is around reviewing. If we have got a research programme, for example, on economics, we will always conduct a review at the end of the period to see whether that research met the policy needs that we set ourselves, whether the research was of a high scientific standard and then how that research then influenced the policy.

Q596 Adam Afriyie: This is a rigid system? Is everything you undertake is measured and monitored afterwards?

Dr Wadge: We certainly have a very specific programme in relation to the research and development function so all of our research programmes are formally reviewed in that way. I think that in terms of our more general policies, then

10 May 2006 Dame Deirdre Hutton and Dr Andrew Wadge

I think it is a case of saying, “Well, how has that policy been developed and what input has there been from the scientist, from other stakeholders?” In the end it is a case of is that policy one that is fit for purpose.

Dame Deirdre Hutton: I think there are a more general set of outcomes for the Agency, have we got to where we want to get to and of which the policy will be an underpinning part. We also do regular tracking of public opinion around levels of trust so, for example, trust in the Agency’s ability to look after their interests in food safety last year was 67% which is quite high; in fact it has gone up 8% in the last year. The science is the basis of that, it is a fundamental building block. If I could just add one point which I think Andrew has not said, is that it is very important to the Acting Chief Scientist role that Andrew is a member of the executive management board, so he has a senior position within the Agency and therefore a platform to say, “No, hang on, this is not right”.

Q597 Chairman: Just before we leave this particular area, Andrew, I am interested in how, for instance, non-scientific staff within the Agency actually get scientific training. I am also interested in how your permanent scientific staff actually maintain their competence, can you just talk me through that?

Dr Wadge: We do not specifically train our non-scientific staff in science because we have a mixture of competencies and skills.

Q598 Chairman: But they have to communicate it, do they not?

Dr Wadge: If we need to communicate science, and it needs to be a very skilled complex bit of science, then someone such as myself will do that communication, we would not have an administrator doing that work, but administrators will bring a range of other skills to the party and help out. We would not look to specifically train our administrators in science, we would make sure that we have got the right mix of skills. Moving on to the point that you asked about, how do we maintain the skills? A number of our scientists are quite expert in their own right and are appointed on to world health organisation expert committees, European food safety authority expert committees and so they are recognised in their own right and contribute to international discussions around regulation and risk assessment, but I think that the other two areas is that through the scientific advisory committees we have a network through which our scientists engage on nutrition or microbiology and keep in touch with those who are at the cutting edge. We also fund a significant amount of research on food safety and individual scientists within the organisations will act as the project officers and will regularly visit the different research organisations and discuss that research and so there is an on-going process of keeping an eye open on the horizon as to what the scientific developments are that could be influencing—

Q599 Chairman: The point I am making, Andrew, is you have obviously given us that assurance that your scientists are actually at the cutting edge rather than in fact dealing with yesterday’s science in terms of applying them to what are very obviously very complex issues regarding food safety.

Dr Wadge: I think that we are in touch with people who are at the cutting edge I think is how I would like to put it, but I do want to develop this role of the Chief Scientist to specifically develop that head of profession role, linking in with the Cabinet Office initiative on professional skills for government, because there is clearly a tremendous need for people within the Food Standards Agency to act as the intelligent customer in terms of scientific information and advice.

Q600 Chairman: Do you think that should be a model across government departments in your personal opinion?

Dr Wadge: I think it is something that works well and I think it may have benefit to other departments, yes.

Q601 Dr Turner: Dame Deirdre, you have got quite an interesting CV and you have obviously spent a lot of time as a lay person working with scientists. You have taken over from a pure scientist, so what do you think for you is the role of the lay person in an organisation such as the one that you are now Chair of, what do you set out to do? For instance, do you see yourself, for instance, as preventing the scientists in the Food Standards Agency from getting too close to scientists working for the food industry, for instance?

Dame Deirdre Hutton: Fundamentally I said that I bring a set of experiences. I suppose the other one I bring is a lot of experience in corporate governance in running organisations, so I do not see myself as a consumer champion, for example, which is how I was described last night which is very irritating. What I do see myself as as somebody who has a lot of experience in running organisations and particularly regulatory organisations, so what I am interested in as Chair of this organisation is making sure that it works in the most effective possible way and one of the things I have been saying since I have been there is that I want the engine room of the organisation to work properly. I see that as being about making sure that there are other proper processes in relation to science, but an awful lot of what we do is not science, it is around enforcement, it is around working with local authorities. I think it is a mistake to think that everything the Agency does is science, there is an awful lot that goes on as well as that. It see it my job as making sure that the board works properly in corporate governance terms, that it sets the strategy, that it holds the organisation to account in an effective way and that we actually deliver on our strategic plan and our business plan. So, in a sense, my role is fundamentally a corporate governance role and I would hope that I would have made certain that we have the processes in place to ensure that the scientists did not get too close to the industry. On the other hand, I also bring a set of

regulatory experiences which say that in some areas like nutrition we do not have any power, we have got to persuade companies to do things and so I also need to bring an understanding of how regulation works at its best, how markets work and how we can persuade the market to do things when we cannot tell them to do things and I think that is a skill which is very different from the scientific skill set which is actually rather important, so my role is leading, nudging, steering, holding to account.

Q602 Dr Turner You carefully describe yourself as not actually being a consumer champion, yet you are in a position and the whole agency is there to protect the interests of the public.

Dame Deirdre Hutton: Absolutely.

Q603 Dr Turner In a sense you are a champion for the public, whether you describe yourself as that or not, and do you think that you have enough lay representation with you on your board to fulfil that role?

Dame Deirdre Hutton: Yes.

Q604 Dr Turner How representative do you think that you are or need to be?

Dame Deirdre Hutton: It is a very interesting question. I think that a few years ago the thinking would have said that what you needed on a board was a set of representatives who came from particular constituencies and represented that constituency; that is not actually a view I share, or what you need to have to make any organisation run effectively. In thinking about what that organisation does you need the right set of skills on the board. You also need people on a board who understand about how to make boards work and how to make systems work within an organisation, so what I have on the board are a range of people who indeed come with different sets of skills. For example, somebody who has an expertise in environmental health, people who have an industry background, somebody who comes from a micro business background, people who have a broader public interest, but I do not see them as representatives, I see them as people who bring a skill set in the interests of achieving an efficient organisation. Just coming back, as it were, to the first part of your comment, I think what I see us as trying to achieve is consumer welfare. I am very, very conscious as a regulator that you stay within your regulatory objectives. We have objectives that are set down in the Act and any regulator strays beyond those at their peril, that is the objective we are supposed to deliver, but fundamentally it comes down to an assessment of risk and the balance between providing the right degree of consumer protection, together with allowing industry to flourish, innovate and compete, because that is the way you deliver goods and choices and value to the customer. It is a balance, and I think it is probably true to say that regulators are doomed never to get the balance quite right, but that is what you are seeking to do, to find the balance between welfare and a flourishing market.

Q605 Dr Turner Your scientific policy almost makes itself in certain areas, like making sure we have food which is not contaminated with bacteria or carcinogenic pesticides or whatever, that almost thinks for itself. The area that I think you touched on where it gets a little more blurred is nutritional advice and there is right now, for instance, a difference between the way in which major supermarkets and food manufacturers are behaving in terms of nutritional content of their food and the systems and advice that you are issuing. How do you feel about that and what is your approach to that?

Dame Deirdre Hutton: Can I ask you, are you referring specifically to the front of pack labelling process?

Q606 Dr Turner Yes, and the sort of traffic light—

Dame Deirdre Hutton: Sorry, terminology, by front of pack labelling, I mean signposting, I use traffic light labelling. We based our approach to traffic light labelling on research in interviews with something like 2,600 people, it is probably the biggest piece of research that has ever been done in this area. We first of all talked to consumers to find out what sort of things they would like. We then tested out the various models that we had developed, so it was a very iterative process in coming to the recommendation we made. What we agreed as a board was four core principles which effectively would allow the industry to reflect their brands, because brands are extraordinarily important to industry, but would give consumers a sufficiently consistent basis. You are absolutely right, there was some disparity across the supermarkets. Waitrose, Asda and Sainsbury's, who collectively represent about 37% of the market, are adopting a system which is consistent with ours; Tesco has decided not to. The way we have approached that is that I have said to the industry, "Look, actually we are all trying to change consumer behaviour here". In one sense this is a large experiment, we do not know what is going to work, we are absolutely clear that we need to give consumers clear information so they can make their own choices and make good choices, so after a year or 18 months or whatever, my offer to the industry is that we look at what has actually happened in terms of consumer behaviour, do the post op research—I am very happy to put it out under an independent academic expert—and at the end of that year or 18 months, okay, let us find out what has worked and if the Tesco system works better than our system, then we should be prepared to go with it, we are an evidence based organisation.

Dr Wadge: If I could just add as well, I think that is a very good example of where we are doing social sciences which is picking up the question that came up earlier on, what is the input of social science, this is entirely an area of social science and behavioural change so it is a very good example.

Q607 Adam Afriyie: Can we be precise, are you actually monitoring the impact of your traffic light labelling scheme during the course of the next 12

10 May 2006 Dame Deirdre Hutton and Dr Andrew Wadge

months rather than waiting until the end of 12 months to look at it, or are you waiting until the end of the 12 month period?

Dame Deirdre Hutton: Essentially the people who have the information about actual consumer purchasing practice in the supermarkets is not us and that is usually confidential information, but what Sainsbury's told us the other day is that they are seeing changes in consumer purchasing, that people are not boycotting red traffic lights and also, which is the underlying purpose, he says it is having an influence on the criteria he is using for the manufacture of products.

Q608 Adam Afriyie: I have also heard that directly from manufacturers. Their criticism is that the Tesco—I am glad to hear you acknowledge that there may be other better labelling mechanisms—but the Tesco labelling scheme had seen equally, if not larger, drops in sales of, for example, unhealthy foods when compared to the traffic light scheme, but there have been accusations that the traffic light scheme is simplistic and unscientific, so I guess you are telling us that you will wait and see what the evidence is in a year's time?

Dame Deirdre Hutton: Yes, but I would also say that on average people buy 67 items in 27 minutes which means eight seconds per item. You are going up and down the aisle with screaming children, you do not have time frankly—and I speak as somebody who has done this—you do not have time to look at the very, very detailed information on the back of the packet and what we are trying to do is to give people very clear simple quick information on what the ingredients are and at what level they appear in the product. Yes, of course it is simple and there is the more detailed information for people who want it, but I have to say consumers very much welcome the simple information.

Q609 Adam Afriyie: Moving now to junk food in schools. Your predecessor suggested that the Secretary of State for Education's pledge to ban junk food in schools is not founded on evidence. Would you describe the policy as evidence based?

Dame Deirdre Hutton: We have been assessing the nutrients that there should be in schools. I am not quite sure that we have said that have we, Andrew?

Dr Wadge: We have a range of policies in schools, but not a particular policy.

Dr Harris: I think the question was about the Secretary of State's policy of banning junk food in schools.

Q610 Adam Afriyie: A while ago we heard the Secretary of State talking about that we must not have junk food in schools. Do you have a view on that, did that ripple through to the FSA in any way and have you done anything about that?

Dame Deirdre Hutton: What we are doing is collecting evidence on what school food should contain and there is an awful lot of movement, some of which is generated by us, some of which is generated by the School Foods Trust. One of the things we are also doing is we have just put out a

research call for the connection between what children eat and their behaviour and I think it would be very good to get some good research evidence on that.

Q611 Chairman: Dame Deirdre, the point of this question is simply this, we are not accusing the Food Standards Agency, we are saying that Sir John Krebs in March said this: "There was no evidence that the Government's policy will work, there was no scientific definition of junk food, there was no cost benefit analysis and there was no public engagement". That was a pretty damning statement from your predecessor about government policy. Do you agree with it and what is the point of having a Food Standards Agency if you are not being used?

Dame Deirdre Hutton: I have to say I do not agree with it. I think the problem I have is that one hamburger eaten once a week is not a problem, but if all that is available in schools is fizzy sugary drinks and not fruit juice and water, then the balance of what children are eating and getting in schools is not good and not good for them. It is the distinction between one bit of junk food and a balanced diet, I think, is a difficult one.

Q612 Adam Afriyie: You mention fizzy drinks at schools, but there is a huge conflict here between healthy foods and obesity, because if you have a diet drink which may not necessarily contain all the nutritional requirements that you may be looking for as opposed to a fruit drink which contains lots of sugar and high levels of calories, then there is an inherent conflict there. How does the FSA address that conflict?

Dr Wadge: If I could just come in. We are working with the Health Department and the Education Department on a range of activities within schools and one of them is about target nutrient specification which is saying, what are the appropriate nutrients that should be available within school meals. We are working on making sure that children learn how to cook, they learn what sort of nutritional advice is important, alongside food hygiene advice. We are doing surveys of school lunch boxes, we are working on a whole range of activities. I think the purpose of the Food Standards Agency is to try to help and play our part in improving the diet of young people at schools, I do not think that that is done by simplistic actions.

Chairman: Andrew, that is not our point, our point is that we have no concerns about what the Food Standards Agency is concerned, the purpose of this inquiry is whether, when the Government makes a policy which it clearly did in terms of junk food in schools, it is based on evidence, and Sir John Krebs said it was not based on evidence at all in his lecture in which he made very damning comments about this unscientific approach. We have heard from Dame Deirdre that yours is an Agency that prides itself on obtaining good scientific evidence before in fact it gives advice. Were you asked for advice before this policy came into being, yes or no?

Q613 Dr Harris: Can we be clear what the policy is, because I think it has not been clear from your previous answer, Dame Deirdre. "The Labour Party Conference in September 2005, the then Secretary of State for Education and Skills, Ruth Kelly, announced plans to ban foods high in fat, salt and sugar from meals and vending machines in English schools saying: 'I am absolutely clear that the scandal of junk food served every day in school canteens must end. So today I can announce that we will ban poor quality processed bangers and burgers being served in schools from next September'." And the remarks the Chairman just made about Sir John Krebs' comment relate to that specific policy. You are independent of the Government, what is your view?

Dame Deirdre Hutton: That is very helpful, thank you, all this happened before my time obviously. My view is, as I think I said, that it is difficult to talk about one specific food and say that is a junk food and ban it. What we are interested in, and I repeat this, what we are interested in is the balance of the diet that children get at school and what we want to do is to make sure that what we have defined as the target nutrient specification is followed within schools. I think there is a sense in which that statement is a particularly political statement for a particular audience in a way that frankly as a science based organisation we do not do. What we do have evidence for is that the diet that children have been fed at school does not fit the target nutrient specifications that we feel they require and that is our approach.

Q614 Adam Afriyie: The FSA had no input into that policy that was announced at the Labour Party Conference?

Dr Wadge: Not that I am aware of.

Dame Deirdre Hutton: I am sorry, I simply do not know, it was before—

Q615 Chairman: Have you commented on it since?

Dame Deirdre Hutton: I have not commented on that specific remark, but what we are doing is the underpinning science which will allow school food caterers or local authorities or whatever to try and make sure that they have the right balance of diet in schools, that is our function.

Q616 Chairman: Dame Deirdre, I am getting a little concerned now, because having spoken very complementarily about the organisation, it seems to me that you are not being proactive when you actually see something which is blatantly wrong being proffered as scientific in terms of government policy and surely that should be one of your roles?

Dame Deirdre Hutton: I think that what we are doing in talking to the Department of Health and the Department of Education is trying to make sure they have the sound scientific base. I mean I think that in the comment that Ruth Kelly made in that in terms of—I am sorry I do not have instant recall—providing a proper diet for children in schools, it is absolutely right and we will provide her with the material to do that. Where, I think, we would differ

and indeed we have been very careful in all our public discussions never to say "a particular food is junk food", where we would differ from her in a way is in the last I see as a highly political statement which she made which is about junk food.

Q617 Dr Harris: It is a political statement, yes, that is fine and apologies for that statement, but it was a policy announcement, so it was a specific policy. This issue is not about whether politicians make evidence based statements, it is evidence based policy formulation by a government and that is what I think was of concern.

Dame Deirdre Hutton: What I think we are doing in this case is helping the Government exactly to make a policy based and evidence based policy in terms of providing the information about target nutrient specification.

Q618 Chairman: Do you ever comment on a policy without being asked because, I mean, you would if it was a private company, would you not?

Dame Deirdre Hutton: Yes, we do. I suppose what I am struggling with is partly we are the generators of the policy often, so we are the people who, as it were, are unearthing the problem and presenting it to government and saying something needs to be done about this, so do we then comment in retrospect? Yes, we do.

Q619 Adam Afriyie: So if the Government was to come up with a policy which was completely contrary to the scientific evidence and advice that you have, you would get out there in the media and point out that this was completely against scientific advice?

Dame Deirdre Hutton: I think I would probably take the slightly different approach in that you will know that all our policy is discussed in public, the board meets in public, I would be far more likely instead of getting on the radio to take that policy through the science and to the board and to say, "Is this something that we can agree with or should we go to government and say, 'We believe this is wrong'?"

Q620 Chairman: Just before you go on, can you actually give me one example where you have actually said to government, "We feel your policy is wrong", is there one occasion where that has happened?

Dame Deirdre Hutton: Probably not in my six months.

Q621 Chairman: Andrew, do you know of any occasion where it has happened?

Dr Wadge: Not as—

Chairman: Perhaps you could write to us and look through the records.

Q622 Adam Afriyie: What steps are you taking to address the concerns over the high level of trans fats in foods, because your labelling scheme does not take that into account?

Dame Deirdre Hutton: The first thing I would say is that there are EU implications here and I shall hand over to Andrew.

Dr Wadge: Two things about trans fats. One is that in terms of labelling we are pressing within Europe for proper labelling of trans fats to be included in the review that is going to take place in 2007–08 so we will be pressing for proper labelling of trans fats. I think in terms of public health this illustrates how we work. What we have done is we have been to the Scientific Advisory Committee on Nutrition, we have asked them about trans fats in relation to our strategy that we will be consulting on later this year on saturated fats and energy imbalance and we said, “What is the importance of trans fats compared to saturated fats?” The advice from the independent experts has been that in relation to overall dietary intake and public health impact actually you should focus on saturated fats rather than trans fats. I think this illustrates the way that we work, we take the science, we act on that science, but we also recognise that consumers want to exercise choice and so we will be pressing within Europe for proper labelling so that consumers can exercise their choice on trans fats.

Q623 Adam Afriyie: Dame Deirdre, in your view do you have the power and influence, enough power and influence, or the right types of power and influence, to encourage the food industry to reduce trans fats or saturated fats within food?

Dame Deirdre Hutton: Interestingly enough I think this is an area where the market is, in a way, running ahead of the science. Marks and Spencer, for example, have taken all the trans fats out of their food because they perceive that as an issue that consumers are worried about, so there is an interesting dynamic here where the market, for its own reasons, wishes to satisfy consumer demands and does that, and the regulator is, in a sense, slightly behind that conversation, so there are a whole range of different influences that go on here.

Q624 Dr Turner Staying with the fats, one of the things which seems of obvious concern is the use by industrial bakeries of hydrogenated fats purely for manufacturing convenience and to increase the shelf life of their products and these are, as I understand it, quite a potential health hazard. How concerned are you and do you think that the public is sufficiently aware that there is this content in most of the industrially baked bread they take off supermarket shelves?

Dame Deirdre Hutton: I think the public probably are not aware and, as Andrew said, we would like to be able to ensure that form of labelling, but I come back to what Andrew said in relation to the science that our view is that the bigger problem is around fat as a whole and saturated fats, that is the bigger problem in relation to nutrition.

Dr Wadge: The other point is that the advice that we have received from our experts is that the intake of trans fats should not exceed 2% of total energy intake and the information that we have obtained from diet and nutrition surveys shows that this is the

case. Having said that, our work on energy imbalance and saturated fats in general show that there is still clearly a lot of work to be done, but the evidence is pointing towards work focussed on saturated fats in general rather than trans fats specifically.

Q625 Dr Turner This seems to be a very key area because there is a clear social divide in this, just as we are very acutely aware that there is a social health divide, there is a clear social dietary divide and these products figure far more in the diet of children in poorer households than in middle class communities, so do you feel there is an urgent need to address this problem and this may need government action to address it?

Dame Deirdre Hutton: I think in a sense you should address that question to the scientists. The advice I am getting which, in a sense you have just heard, is that this is not the critical need, no. It is one of those issues where, in a sense, the public perception of something has actually moved ahead of where the science is in terms of being more worried about something than the scientists are.

Q626 Dr Turner I am thinking of our obese children who are drinking fizzy drinks full of sugar, they are being stuffed with bread which contains far more than 2% of hydrogenated fat, that we are building up an enormous health risk for the future in these kids?

Dame Deirdre Hutton: I agree with you about the enormous health risk to these children, but that is about the total energy balance and I think what Andrew is saying is that the greater problem here is around fats as a whole, saturated fats, and their contribution to the energy imbalance and for us that is a greater problem than the very specific problems which are perceived as being the—

Q627 Dr Turner Yes, but what are you doing about it, what are you proposing to do about it?

Dame Deirdre Hutton: About the total of saturated fats?

Q628 Dr Turner The problem as you state it.

Dame Deirdre Hutton: That is exactly why, it goes back to the previous conversation, that is exactly why we are doing two things, first of all giving the public the information about levels of fat so that they can see how to change their own dietary habits, and I should say that the purpose of sign posting is to help people understand complex foods because the information we had from consumers is that they simply do not know what is in complex food, so levels of salt, in fact, and sugar indeed come as a huge surprise to people when they start to see the labelling, so the one strategy is to give the public the information, the other strategy is to work with the industry to start reducing levels of fat. If you recall we want to reduce salt, fat and sugar, we started with salt, we had a very successful campaign around the reduction of salt and industry has worked with us actually very well on that. We are now moving on to

fat and sugar which is rather more difficult because it is actually an integral part of the food rather than an added ingredient.

Q629 Dr Turner: But not in bread.

Dr Wadge: Could I make one very specific point on that, in that you asked what exactly are we doing. Our strategic plan target for 2010 says we want to shift from 13.4% of energy intake due to saturated fats to 11%. We will be consulting on a strategy to achieve that.

Q630 Dr Turner: Is aspartame safe to use as a sweetener?

Dr Wadge: We have received—

Q631 Chairman: Yes, or no.

Dr Wadge: We have received advice from the—

Q632 Chairman: Yes or no.

Dame Deirdre Hutton: Scientists do not do yes or no, science evolves.

Dr Wadge: I have to explain this in terms of scientific evaluation. Aspartame has been evaluated on a number of occasions, most recently by the European Food Safety Authority at the end of last week.

Q633 Chairman: What is your view of their findings?

Dr Wadge: In our view, based on that independent scientific expert advice, it does not present a risk and is safe to use.

Chairman: Thank you very much indeed. I am coming back to question 3, I am sorry, and we need to move, Committee, now. Thank you very much, that was a very interesting section.

Q634 Bob Spink: Dame Deirdre, could you just clarify, did you say there was 67% public trust in the FSA earlier?

Dame Deirdre Hutton: When we did the last consumer survey it was 67% and it had increased 8% in a year. That is trust in the ability of the Agency to ensure food safety.

Q635 Bob Spink: You said that was quite high.

Dame Deirdre Hutton: It is not bad, compared to many other levels of trust in society.

Chairman: That is putting him in his place.

Q636 Bob Spink: Compared to trusting, perhaps, the political bodies, you are right, but compared to trusting independent bodies that are set up to defend the public interest, I would put to you that that would be quite low in fact, very concerningly low; do you think that is because the advice coming out from various scientific bodies is changing all the time, like red wine is good, red wine is bad? It focuses on things depending on the circumstances evolving.

Dame Deirdre Hutton: I must say to you first of all that compared with the experience of another FSA, 67% feels pretty high and it is going up, which is the really important thing. For consumers the range of advice that comes out is very, very difficult and that is partly a problem with the media, is it not, that they will pick things up and report them so you get 27

different stories about diet in the media each week, which does make it very difficult, hence our role in things like signpost labelling.

Bob Spink: We politicians like to blame everything on the media, do we not?

Chairman: We will come back to the media.

Q637 Bob Spink: You have produced this 29-point science checklist. I am a scientist, I have read through it, it is an exercise in the pretty obvious, I guess—for instance, “Has a comprehensive literature survey been undertaken?” That is about Key Stage 3, is it not? I just wondered, what was wrong with the Chief Scientific Adviser’s guidelines for scientific analysis and policy-making?

Dame Deirdre Hutton: Can I just explain the genesis of the scientific checklist? It started because I was aware that we did not have on the board—partly because I have replaced John Krebs but also just the make-up of the board in general—many people, in fact only one person, with a scientific background. Therefore, in its role of holding science as well as everything else to account, the board needed to know what questions to ask effectively, so the development of the scientific checklist was very much about giving board members a tool for interrogating science when it came to the board.

Q638 Bob Spink: Can I come back to my question then, Dame Deirdre, what is wrong with the guidelines on scientific analysis and policy-making which the Government’s Chief Scientific Adviser has put forward and which I would suggest would be probably as comprehensive as yours?

Dame Deirdre Hutton: There probably is not anything wrong with them, but this was something we developed internally according to what the board members said they wanted. We then floated it with the chairs of the independent scientific committees who, having initially been slightly suspicious of it as an approach, actually became rather positive about it, but Andrew could talk about that.

Dr Wadge: We very much work with the Office of Science and Innovation and the key scientific guidelines on how we do science are ones that we follow very closely, and we have been able in the past to highlight specific examples of how we use science in developing policies.

Q639 Bob Spink: Is this checklist based on their scientific analysis in policy-making?

Dr Wadge: It addresses a very specific thing that is slightly different from the purpose of the OSI guidelines, which is around what are the types of specific questions that the board members need to ask themselves when assessing a scientific issue, and we need to remember we are dealing with a whole range of complex issues from scientific information about front of pack labelling and what consumers are saying about that, information about atypical scrapie and very complex scientific information with uncertainties, so it is how do we (as in we the board) weigh up on what might be from a wide variety of different quantitative and qualitative research? How do we know the different types of research and how

10 May 2006 Dame Deirdre Hutton and Dr Andrew Wadge

do you weight those? It is really just going through a systematic way of assessing that; it is an aide memoir basically for that.

Q640 Bob Spink: Is it likely to become just a tick-box or will it be really useful to you?

Dame Deirdre Hutton: It will be very useful to board members, and it is not something that board members are going to sit there with at board meetings asking each question in turn—apart from anything else there is not time. What it will do is just direct them in certain ways in thinking about how they answer questions. I should also say, because I started off by saying that the genesis of this was in not having very many people with a scientific background on the board, we have just made two appointments of people who do have scientific backgrounds because it was something I was keen to rebalance a little.

Chairman: It was not used with the Government's junk food issue, was it? I leave that hanging in the air.

Q641 Bob Spink: The interpretation section may have been. The Institute of Food Science and Technology has drawn attention to a developing skills shortage, particularly in the professional and science areas: do you see this as a problem? How many postgraduate places are you currently funding and is that useful and a good way to spend your money?

Dame Deirdre Hutton: I do think it is a problem. Indeed, several years ago when I chaired one of the foresight programmes on the food chain for the Office of Science and Technology it was something we identified then as being a real difficulty, that the number of people with skills going into the industry was not sufficient, but on the particular question, Andrew.

Dr Wadge: First of all I ought to say that we work closely with the Institute and yesterday, for example, I was giving a talk on complexities in the food chain with the Scottish Food and Drink Federation and the Institute of Food Science and Technology. We are funding six postgraduate studentships this year, and this is a new scheme which we have recently introduced. We think it is important in terms of helping ensure the science base and ensure that people are trained in areas of food science, but also of course they may want to come and work with us in the longer term. Four of these six are working on areas of diet and nutrition and two on issues around microbiological food safety.

Chairman: I am going to move on now because I am very conscious of the time. Margaret, do you want to start on risk?

Q642 Margaret Moran: Turning to the issue of risk, you mentioned at the outset, Dame Deirdre, that you are fundamentally about balancing risk. Can you tell us whether you feel the Agency has sufficient expertise in risk management and assessment, and what indicators do you use to assure yourself that that is the case?

Dame Deirdre Hutton: There are fundamentally two sorts of risk that we deal with, although they are integrated: one is the assessment of risk in terms of developing policy and standards, which is very much what we are talking about today, but there is another set of risks which are the operational risks such as what is the risk of that particular food outlet causing food poisoning. I would see that as operational risk and we do try to integrate that within the Agency. There is not a formulaic approach to risk; on the one hand science is a moving object as it develops and, on the other hand, consumer attitudes to risk also change, and then there are the market attitudes to risk. What we are trying to do all the time is, to bring all of those views together and to be clear about the science insofar as we can, to be clear about the uncertainty and therefore be clear about what the options might be for risk management, all the time as well doing the consultation with the public and other stakeholders to try and marry into that process the acceptability of risk or the risk appetite, in the jargon, for the public. It is very difficult to put a precise indicator on that or say what is the proper formulaic approach to risk, it is much more of a moving target where there are various processes you go through to try and come to the right answer.

Q643 Margaret Moran: Given that risk, as you say, is a very complex area, do you feel that you have the expertise within the Agency to deal with that very complex set of issues?

Dr Wadge: Perhaps I could use the example of how we respond to food incidents, and we record about 1,000 food incidents a year on our database. The way that we respond to those is we have a very clear protocol within the organisation for bringing it together, starting with the risk assessment, if necessary seeking independent advice very quickly on that, then weighing up the various options for interventions and the costs, and that could range from simply issuing advice to consumers, that you may wish to be aware that this has happened in relation to food, through to complete product recalls if that is appropriate. We do that and we follow a protocol, and at the end of it we have a process of evaluation. I chair an emergency committee which reviews how we have handled particular incidents, the lessons learned and whether we have got that risk management right.

Dame Deirdre Hutton: If I can answer your specific question, yes, I do think we have the skills but sometimes they are pretty stretched.

Q644 Margaret Moran: Is that because the skills are not there?

Dame Deirdre Hutton: No, the skills absolutely are there, but if you think about last year, apart from the on-going thousand incidents we had three major incidents: one was Eurofreeze in Ireland, E-coli and Sudan 1. If two of those incidents occurred at the same time, your key people are dealing with one and all of a sudden there is another one, and it is a question of how you balance the on-going resource

in a reasonably economic way, coupled with the potential for two major incidents to occur at once. There is a stretch, but do we have the skills, yes.

Q645 Margaret Moran: You are touching on my next question which is how do you ensure that regulation is cost-effective and proportional to the risk with a particular issue, and do you use the value per life calculations to guide your policy-making?

Dame Deirdre Hutton: In answer to the last, yes, and the clearest example we have of that is when we were looking at whether over 30-month beef should be allowed back into the food chain—Andrew is just looking up the figures. That was quite early on in my time in the Agency and one of the things that struck me very forcibly is that there is almost a government fear of putting monetary values on life out into the public domain. OTM was a very interesting example because we did exactly that, we said if you take route A it will cost X million per life saved, if you take route B it will cost Y million per life saved, and that was discussed openly with stakeholders over a period of months. In the end we went effectively for the route which put the lower value on life saved, so yes, we do. I thought that was a really encouraging example, because if you discuss it openly in the public and treat the public as grown-ups you can have all sorts of debates with them and it is really important. I have forgotten the first half of your question, I am sorry.

Q646 Margaret Moran: You have probably answered it anyway, thank you very much. How do you define the precautionary principle?

Dame Deirdre Hutton: I am going to ask Andrew to define it.

Dr Wadge: The problem with the precautionary principle is that I have yet to see an internationally agreed definition of it, so therefore what we like to talk about is the precautionary approach, which is actually what we take in relation to consumer safety. Our statutory responsibility is to put consumer interests first in relation to food and if you look at the risk assessment process, if you look at the approvals process for a novel food coming on the market, it is essentially a precautionary approach: you are not allowed to put a novel food on the market until you have satisfied independent expert advisers of its safety. Our approach will be, in terms of doing a risk assessment, let us make sure that the public will not be harmed. If at the end of that period of assessment there is some uncertainty, there is an absolute duty on us to say what that uncertainty is so that people can then exercise choice. An example of this was in relation to the dioxin emissions from the funeral pyres in foot and mouth where our modelling said there was probably unlikely to be deposition of dioxins around the farms to an extent that would cause undue intake in the population, but there was such a tremendous uncertainty in the models that we gave precautionary advice to those people who consumed milk from their own farms that they may wish to vary their diet whilst we then conducted some research to measure what was happening at the farms rather than relying on the

model. The measures actually in the end supported our advice and we were able to remove that precautionary advice, but that is an example of how we use the precautionary approach as opposed to the precautionary principle.

Q647 Dr Harris: I am not sure I see the difference. I do not know if that was a definition of the precautionary approach because you said three different things, if we break down what you said, I will try and remember, although, like you, I do not have instant recall. You said for example that you are not allowed to put a novel food on the market until it has been tested for efficacy and “safety”, but what is safety because safety is never 100% guaranteed, as you yourself have said quite rightly in your documents, so in a sense that is not a clear definition.

Dr Wadge: There is a definition of safety in relation to a novel food.

Q648 Dr Harris: There is?

Dr Wadge: Yes.

Q649 Dr Harris: So the precautionary approach means requiring them to meet what definition of safety?

Dr Wadge: To be as safe as conventional counterparts.

Q650 Dr Harris: Is that the precautionary approach or is that just the standard approach you take for food safety, which is what I thought would be obvious?

Dr Wadge: I think it is precautionary in the sense that you are requiring the food industry to conduct a series of tests on a particular product before putting it on the market; a non-precautionary approach would be to simply put it on the market and see what the effects were.

Q651 Dr Harris: I am interested to know that that is your view of the precautionary approach—that you test something first against standards. Because in your first answer, you also said in respect of dioxin, that your precautionary approach was to say that people may wish to change their diet, but you did not ban anything.

Dr Wadge: Yes.

Q652 Dr Harris: So, you just offered advice—which I would call an advisory approach—given the uncertainty. Are you saying that giving advice when there is uncertainty is a further definition of the precautionary approach?

Dame Deirdre Hutton: No, it is one of the tools you have for a precautionary approach. A precautionary approach could, it seems to me, include a whole range of things, from banning something to giving people advice so they could make decisions for themselves. A precautionary approach is not one thing, there are a range of activities that you could undertake.

Q653 Dr Harris: Some people say a precautionary approach is to say do not do something, or not allow someone to do it until your evaluations are complete, but in the example you gave your precautionary approach was instead to say “We advise you that you might not wish to do something while we investigate as best we can”. So haven’t you have chosen—I am not arguing with you, I am just saying it is the case—each version of the precautionary approach to fit the situation.

Dr Wadge: It demonstrates the importance of assessing, on a case by case basis, individual risks, because each one is different. In this case foot and mouth pyres were burning, dioxins were being emitted in very small levels, modelling had been undertaken which suggested that there was no risk to public health, but there were tremendous uncertainties in that model and it seemed entirely appropriate for us to say on a precautionary basis that the at-risk population should be made aware of that, and if they wished to reduce the possibility of risk they could on a precautionary basis vary their diet, and that is how they could do it.

Q654 Dr Harris: You are using precautionary there adjectively as a good thing—again, I am not arguing with you—that, it is good practice to do something that is precautionary. If you take eggs, where the World Health Organisation says “make yolks solid” and you say “just make whites solid, the yolks can be runny,” you think your position is correct, appropriate, and you think that the World Health Organisation position is not appropriate, it is over-regulatory. Yet you have described the World Health Organisation advice as “precautionary”, Dame Deirdre.

Dame Deirdre Hutton: It is precautionary, it is just more precautionary than our advice.

Q655 Dr Harris: You did not describe it as too precautionary. Maybe you were misquoted in the *Telegraph* where you described it not as “too precautionary” or “over-precautionary” or “adversely precautionary”, you just described it as “precautionary”. So I am surprised that you express disagree—not with the word “precautionary”. Do you see the difficulty we are in?

Dr Wadge: I can see exactly the difficulty you are in and hopefully I can illuminate the position. It again comes back to looking at the specific case and the circumstances around that particular issue. We contacted the WHO and asked them what was the basis of that, and they said WHO is giving advice for the whole of the world, relating to a whole range of diseases and a whole range of circumstances in which people consume eggs, and that advice therefore was recognising that there is a whole range of different hygiene factors that are quite separate from those that occur within the UK, and they felt it was justified therefore to issue that more precautionary advice than our own precautionary advice which was around cooking until your whites are hard.

Q656 Chairman: Just as a precaution we would very much like you to write to us with what you regard as your definition of precautionary advice.

Dr Wadge: Okay, yes.

Q657 Dr Harris: But the WHO advice was specifically to minimise the danger posed by avian flu, that was the context of it, it was not to deal with other things that you just mentioned.

Dr Wadge: Sorry, we contacted WHO and they were quite specific about that, that it was general advice—they did not want to differentiate between avian flu and other hygiene risks in relation to eggs, they were quite specific on that point, whereas our own advice is specifically around avian flu.

Chairman: I really do need to move on, we are desperately running out of time. I thought we might go on to some food scares.

Q658 Dr Harris: My next word was going to be Sudan—not the country but Sudan 1. The risk of eating the dye contained in processed food has been equated by Alan Boobis of Imperial College to the cancer risk of smoking one cigarette in an entire lifetime. Do you think that the decision to do what was done in respect of recalling all the affected foodstuffs was therefore proportionate in relation to that risk?

Dame Deirdre Hutton: I am going to start off by saying I was not there at the time, therefore I was not privy to all the discussion that went on, but I think an absolutely key point is that the dye that was being used is illegal and it is not supposed to be put in food. There is a very fundamental point about the extent to which you expect people to keep rules that are perfectly clear.

Dr Wadge: If you look at our website and the statements we have made, we have been very clear that the levels were extremely low and any risk would have been low. In relation to the independent expert advice that we received, Sudan is a genotoxic carcinogen and the independent expert advisers say that therefore we cannot identify an absolutely safe level, but the key point is that it is illegal, and I think that from a regulatory point of view I would turn it round the other way: how would consumers feel if we turned a blind eye to the food industry using an illegal dye that is used as an industrial boot polish, present in their food? I do not think consumers wanted that and that was our assessment.

Q659 Dr Harris: Those were the other two options? Complete withdrawal causing effectively panic—at least in the media—or turning a blind eye. We are talking about proportionality as we just heard from Margaret Moran: could a middle way not be found to say that the risk does not appear to be significant to health on the levels found here? But in the interests of keeping to the law and therefore having public confidence, was the basis on which to move forward. So there is no middle way.

Dr Wadge: It is very difficult, a middle way, when something is either illegal or not illegal, and I find it difficult to find see where the middle way is in that. We identified that it was present and we were able to

trace its use throughout the food chain, and where we were clear that it was being used and not permitted then those products had to be withdrawn.

Q660 Dr Harris: On the basis of illegality not safety.
Dr Wadge: Yes.

Q661 Dr Harris: Do you think that distinctions were stressed enough, because there is benefit in not having panic, okay? No one is saying that people should be allowed to do illegal things, or at least allowed to get away with doing illegal things, but the normal way to deal with that is through prosecution, where appropriate, rather than a total withdrawal which is implied to be on the grounds of safety.

Dame Deirdre Hutton: I slightly question that. I do recall seeing Sir John Krebs on television saying that it was being withdrawn on the grounds of the fact that it was illegal. There are always various translations put on these things by the media which it is sometimes difficult to control, but I think it was always clear from the Agency's perspective—again, saying that as somebody who was not there—and certainly from my recollection of Sir John on the media, that it was being done on the ground of illegality.

Q662 Dr Harris: I am not sure recall is appropriate for illegality, you just need to stop the illegal behaviour. The illegal behaviour was having it in the food chain, not people then buying it. It is not illegal for me to buy something that is not particularly dangerous that contains something that it should not contain. This was the biggest packaged food recall in British history and it is remarkable, and it has been remarked on by Professor Lofstedt, for example, who as you know is an expert on risk management, that that did not seem to be based on the evidence of safety, which is unfortunate shall we say?

Dr Wadge: I had the benefit of speaking to Professor Lofstedt yesterday because he was talking at the same meeting as I was talking at, and he recognised that that was not on the basis of safety but on the basis of the fact that it was not permitted in food. The key point here is that what we want to do within the Food Standards Agency and working with the food industry is prevent these types of incidents occurring in the first place because they are hugely costly to the industry and they are not helpful in terms of consumer confidence, and that is why in the aftermath of the Sudan 1 incident we set up a food incident taskforce with a whole range of people from the food industry and enforcement community consumers to look at ways in which we can prevent these types of things happening, and those are around much better assurance schemes right back through the food chain and a better use of intelligence through the food chain. We have to be clear that where contamination does occur and where illegal contaminants are present then under general food law there is a requirement for that food industry not to sell the product and to inform the competent authorities and consumers.

Chairman: I just want to bring Margaret in here briefly about the issue of the use of media and information.

Q663 Margaret Moran: You touched on the fact that the media have a very significant role, particularly in the perception of risk. Have you attempted to engage with the media in dealing with that and have you ever thought about using a standardised index or table of risks so that as a new risk emerges there is some sort of context for the public and the media to gauge what is actually happening?

Dame Deirdre Hutton: On the first part of your question, yes, we do, we engage with the media all the time, not least because they are a key way of getting messages out to the public and the sensible way to approach the media is to have constant background briefing with them, so that when it comes to the point at which you have a real message to get out you are in a much better position to do it, so we have a big communications department and that kind of liaison with the media is constant. In terms of your index of risk question, I am giving Andrew time to think about the answer to that but I am conscious of the fact, for example, that the BBC is beginning to think very seriously about risk and is thinking about its own risk guidelines and whether they are appropriate for the way in which issues like MMR are handled in the media.

Dr Wadge: Guidelines are extremely helpful and I very much welcome the BBC's approach to producing guidelines on risk. The idea of having an index about risk often comes down to ideas of saying you can compare this risk with another risk, so if Sudan happened we could say it is the equivalent of. The difficulty with that is that usually those are numerical and I do not think most of the public think in terms of 10 to the minus nine or 10 to the minus seven, and the other point is that as Professor Ragnall would say, actually there is a big difference in how consumers receive risks, whether they are voluntary risks or involuntary risks. People do not like mobile phone masts, but they do like mobile phones—they are not worried about the risk of actually using it but they do not want the mast at the back of their gardens.

Chairman: Hear, hear.

Q664 Dr Harris: It is not that simple though, is it?

Dr Wadge: That is the difficulty of using that type of quantification.

Q665 Margaret Moran: Should it be up to the BBC to be providing guidelines? Surely that is your role, to have a context for there media and all the rest of us to measure what is coming at us?

Dame Deirdre Hutton: Any sensible broadcasting organisation ought to have guidelines, absolutely, in the same way as you would have guidelines around ethics and around neutrality and all the other things I am sure they have guidelines for, so in the handling of risk it seems to me it is entirely sensible for them to do that. It is also good if they draw up those guidelines in conjunction with bodies like ours, or at

10 May 2006 Dame Deirdre Hutton and Dr Andrew Wadge

least getting our input, but that aside yes, of course, when we talk to them about particular issues we will always try and put it in a context and try and frame the risk for them in a way that is understandable. I would find it very difficult to say this is a level one risk, this is a level two risk, because actually what is a level one risk for Mrs Jones may be a level three risk for David Bloggs. That kind of standardisation is therefore quite difficult.

Chairman: I am very conscious that we only have four minutes to go and I wanted to get Brooks in with one question on transparency.

Q666 Mr Newmark: I am just curious as to what opportunities there are for sharing best practices between government departments in areas such as risk management, communication and public engagement.

Dr Wadge: Within the UK?

Q667 Mr Newmark: Let us start within the UK. I was going to ask an EU question but I will just focus on the UK for the time being.

Dr Wadge: We are doing both in the sense that we work closely with the Office of Science and Innovation, with DEFRA and the Department of Health on identifying areas of research and exchanging best practice in relation to risk management, but we also maintain and develop very good contacts with the national agencies in different Member States across Europe, with the European Food Safety Authority and also with colleagues in the US, Australia, New Zealand and Canada around

risk assessment and managing risk, trying to develop best practice and also share intelligence on food safety issues.

Q668 Mr Newmark: Have you been proactive in sharing that?

Dr Wadge: Very much so. This year we have recently signed an agreement with the Canadian authorities about sharing information which was an initiative that we developed and the Australian and New Zealand authorities are now keen to join that.

Dame Deirdre Hutton: If I give you an example of being proactive, I brought the EFSA management board over to the UK in February to look at what we were doing in terms of nutrition and labelling in the UK, so yes, we do.

Q669 Mr Newmark: You have found that other departments have been responsive to your whole approach to this?

Dr Wadge: Yes is the answer, in relation to food. I cannot comment more broadly in relation to science.

Mr Newmark: I had some interesting questions on the EU but, unfortunately, time is short.

Q670 Chairman: I am very sorry. Can I thank you, Dame Deirdre and Dr Andrew Wadge, for a tremendous session this morning. We have a lot of questions that we would like to write to you on.

Dr Wadge: We would be very happy.

Chairman: In terms of this inquiry because my poor chairmanship has meant that we have not got through as much as we should. We thank you enormously for your contributions, thank you very much.

Wednesday 24 May 2006

Members present:

Mr Phil Willis, in the Chair

Mr Robert Ffello
Dr Evan Harris
Dr Brian Iddon
Margaret Moran

Mr Brooks Newmark
Bob Spink
Dr Desmond Turner

Witnesses: **Dr Richard Pike**, Chief Executive, Royal Society of Chemistry, **Professor Martin Taylor**, Physical Secretary and Vice-President, Royal Society, **Dr Caroline Wallace**, Science Policy Advisor, Biosciences Federation, and **Dr Peter Cotgreave**, Director, Campaign for Science and Engineering, gave evidence.

Chairman: Good morning, everyone. Can I apologise to our learned and distinguished visitors for a slight delay this morning. We were trying to agree the heads of our report on MRI scanners and the European Directive before you came in. Could we welcome Dr Richard Pike, the Chief Executive from the Royal Society of Chemistry; nice to see you again Richard, Professor Martin Taylor, the Physical Secretary and Vice-President of the Royal Society, Royal Society of Chemistry; good morning to you, Dr Caroline Wallace, the Science Policy Advisor for Biosciences Federation; good morning to you, and Dr Peter Cotgreave, the Director of the Campaign for Science and Engineering; nice to see you again, Peter. As you are the neutral on this panel, though you are never neutral on anything, could we invite you to chair your panel if you want to direct questions. The purpose of this first part of the session is to try and explore the role of the learned societies and the way in which the campaigning organisations give evidence to governments and the way in which government uses scientific evidence in policy making. This is part of our broad sweep programme which is looking at this whole issue of evidence-based policy.

Dr Iddon: Chairman, before we begin can I declare an interest in that I am a Fellow of the Royal Society of Chemistry.

Q924 Chairman: Thank you very much indeed. Martin, perhaps I could start with you by saying it is clearly important that in order for the Government to be an intelligent customer of scientific information it has to have sufficient capacity to become an intelligent customer. Do you agree, and do you think it is?

Professor Taylor: I think it is developing capacity. It needs to learn to interact with all the learned societies, and the Royal Society in particular, a little bit more. If I may speak for the Royal Society for a minute, I think we are a very great resource. We have not just got our fellowship that covers expertise in all science but also all our various contacts, networks, including networks overseas. This is something superb for the Government to be able to draw from and I do not think, to be honest, they draw from us quite enough.

Q925 Chairman: I will come back to that point but what I am really asking the panel here is, do you feel—

Professor Taylor: Do you mean within Government?

Q926 Chairman: I think you have huge expertise in terms of the learned societies and in terms of Peter's organisation as a campaigning group for science and engineering, but do you feel that in order to be an intelligent customer the Government has sufficient capacity within it to be able to be an intelligent customer?

Professor Taylor: Can I be absolutely sure I understand the question, having gone off slightly on the way I saw the question in the first instance? Do you mean the scientific expertise within Government?

Q927 Chairman: I think in order to go to Marks and Spencer's to get the appropriate clothes for your children first of all you have to have some ability to know their size and what it is that you want. Does the Government itself have within it the capacity to know what sort of scientific information it needs and to be able to judge that?

Professor Taylor: The first part of my first answer was spot on in that regard. This is an increasing entity. We welcome greatly the fact that there are now Chief Scientific Advisers, I think, in the majority of the departments, if not all, and this has helped bring scientific understanding into the departments, but that in itself also needs building up. I do not know all the departments' cases but I am thinking in particular of Defra and the MoD where I am aware of Scientific Advisory Councils in addition to the CSAs and this has certainly helped build up the capacity. It is something we welcome. I can pick on Defra because we know Defra very well. We have done some reviews for them and we are quite impressed at the way they are starting to use their Scientific Advisory Council.

Q928 Chairman: So it is sort of five out of ten?

Professor Taylor: Actually I would go a little higher.

Q929 Chairman: Six then.

Professor Taylor: I would say six plus because it is on the way up.

Q930 Chairman: Caroline and then Peter?

Dr Wallace: Defra is one of the Government departments that we deal with a lot and we gave evidence on that. I would agree with Martin that it is work in progress. We were concerned that funding cuts have resulted in scientists being employed on short-term contracts within Defra. Also, merit promotion has been taken out of career progression within core Defra and there is a perception now that to progress in your career you move policy area every 18 months or so, so no-one is in one policy area for more than two years which makes it difficult for people to horizon scan. Yes, Defra have got their Scientific Advisory Council. They have also started a series of seminars where they have external speakers and they are putting into place a continuing professional development scheme which the Institute of Biology have advised them on but as yet they are not using the values for career progression.

Q931 Chairman: So, Peter, Defra is okay but the rest is not so good?

Dr Cotgreave: As Professor Taylor has said, the situation is getting better and members of this committee in the last Parliament will remember the International Development Department, for example, not having a Chief Scientific Adviser. This committee pressed very hard for that to happen and now they have one and I think he is doing good work, but it is not true that all departments yet have one. Only yesterday Mr Lamy and Lord Sainsbury appeared before a House of Lords committee talking about Culture, Media and Sport and conceded that that department probably should get itself a Chief Scientific Adviser because it deals with a lot of scientific issues. It has the Natural History Museum, the Science Museum and the British Library but it is also responsible for the Olympics and sports science is going to be important if we are going to win any medals in 2012, so they conceded that there was a case for having one there. However, I think one needs to look not just at the top level of Chief Scientific Advisers and Advisory Councils but also at the lower level, the daily grind of making policy on a daily basis. I would make a distinction between high profile issues where everyone is in a panic and the press are all up in arms and we are all going to die tomorrow, like BSE or bird flu where I think there has been a lot of progress. People see Dave King on the television talking about bird flu and they feel, "He is a man who knows what he is talking about and I trust him and he is being honest with me", and on the other hand there are the rather more boring day-to-day things that are not going to catch the headlines but where good policy, in order for taxpayers to get good value for the money they are spending on policy, is informed by science and by evidence. Just today on the front page of the *Financial Times* there is a piece about a National Audit Office report on the Small Business Service and it says that policy planning is difficult because the way the Small Business Service operates it is impossible to know what measures are effective because they are not doing what a scientist would do and measuring the effects of different interventions

and comparing them. At the top level things are getting better although there is still a way to go, but lower down there is still, I think, a very long way to go.

Q932 Chairman: Richard, do you concur with those conclusions, that we have a long way to go but we have made a good start?

Dr Pike: There is some way to go. I guess I come here having been in the Royal Society of Chemistry for just three months. I have seen some government operations but I have also seen a lot of activity before that, so what I would like to suggest is this. There is a definite process in the way that scientific evidence is accumulated or acquired by a government, be it this Government or other governments, and the way in which it deals with that and disseminates the outcomes. My own experience, both in the UK and abroad, is that the first step in this process is that you have staff within a government department who have reached a basic minimum level of understanding of the science associated with the activity of that department. Therefore, while it can be a very good idea to have a chief scientist in a department, be it in the UK or elsewhere, what is crucial is that there is a training programme which means that all the staff of that department are aware of the key issues, the key aspects of science and the key numbers so that when matters come in, be they questions or issues that they observe in the outside world, even at the very basic level antennae go up, as it were, and there is a process by which issues are elevated.

Q933 Chairman: I do not think we would disagree with that. The question I am asking is on the evidence which the Royal Society of Chemistry gave to this committee was "a problem concerning the nature and adequacy of the in-house expertise in government departments".

Dr Pike: That is really what I am addressing.

Q934 Chairman: You feel that is the case?

Dr Pike: That is what I am addressing.

Q935 Chairman: I wonder if I could turn to you, Dr Wallace. The Biosciences Federation told us that good policy-making in government depends on a "strong scientific culture within departments". What do you mean by that and do we have it?

Dr Wallace: I do not think we have it as yet, like Peter said, at the lower levels. I think that policy staff need to be encouraged to maintain their awareness of current issues and there should be a programme in place where they continue to attend seminar series, et cetera. That would be our main point, that there is not really that scientific culture at the lower levels, although they may have very good Chief Scientific Advisers and Advisory Councils.

Q936 Chairman: Why do you think that is?

Dr Wallace: Again, it is because of the way that career progression is within Defra—I cannot comment on the other government departments but I do not know if there is any difference—in that the

policy staff move around all the time. There is no staying in one position and being recognised for being good in that position.

Q937 Dr Iddon: If you were the responsible person in a ministry setting up an advisory committee for the first time how would you ensure that you had the right balance on that committee?

Professor Taylor: I would consult widely in the first instance. I would say, “Go out and get a lot of independent advice”. Obviously, I would say, “Go to the Royal Society”. I would say, “Go to all the learned societies, get your advice and form your own opinion from that”. It is really important to get the right people and possibly international experts on Science Advisory Councils where possible. The net should be cast wide.

Dr Cotgreave: I think it depends to some extent whether you mean an advisory council on a specific subject, such as the Advisory Council on the Release of Organisms into the Environment or something like that, in which case what you need on that are the best scientists specifically knowledgeable in that field. As Martin says, they might be anywhere in the world and you need to go to the Royal Society, the Biosciences Federation, the Royal Society of Chemistry, institutes, wherever they are, and make sure that you have, in the judgment of the scientific community that needs to respect this committee, the best people. If you are looking for a more general advisory board for a department then I think you probably need to look at different people. You need people who are in some sense generalists, people who can pick up different subjects, people who have contacts in a wide range, people like Dave King, in fact, who has to do this on a daily basis and is very good at it. It would depend on the nature of the committee you were setting up but if it was going to be a scientific advisory committee it must have the respect of the scientific community. The only way you would achieve that would be by getting really high quality scientists onto it.

Q938 Dr Iddon: With either model do you think there is a place for either a lobby group or even a lay person to sit on one of those advisory committees?

Dr Cotgreave: Yes, I think there is, as long as it is clear that that is what they are, a lobby group or a lay person and that is where their voice is coming from. I do not have a problem with people who have other opinions or who come from a different way of thinking. I do not want to gag anyone or stop them having their say, so yes, I think there is certainly room for that as long as everyone is clear that that is what they are and that their opinion will be informed in a different way from the opinions of scientists.

Q939 Dr Iddon: Have you any other comments, Richard?

Dr Pike: I think with these committees it can sometimes be very useful—and maybe we are alluding to it here—to have one or two people who have the wider picture. In other words, you can imagine that, if you are not careful, if you just have a lot of specialists focusing on their own areas, there

may be some tunnel vision and you need one or two generalists, I think, to try to be the glue. The other very important point I would make is that the chairman is crucial and the conduct of the meetings is also crucial. There has to be, certainly in the early stages, the more open questions—the what, the why, the how, why is this consistent with that, why is that inconsistent with this. It is a combination of structure and process. Fundamentally you need to figure out where this committee meeting features in the overall process. What is the outcome down the road? How will recommendations be implemented? When a committee is set up the process has to be thought through all the way to final delivery.

Q940 Dr Iddon: Defra has set up an independent Scientific Advisory Council. Is that a model that should be replicated across state departments, do you think?

Professor Taylor: It seems to be working very well and that is what I was speaking to, some kind of standing council, when I was saying that you really want to cast the net wide and bring in experts. When you move down to specific issues I agree completely with what my colleagues have said, how important it is then to start to engage perhaps with lobby groups, to see how the public see the formulation of the issues. When we had our nano-technology report jointly with the Royal Academy of Engineering one of its great successes was to engage with the public right upstream. I would say that at that level yes, you should engage with others, but for the model from Defra, which I admire greatly since you ask, the important thing was experts and I would like to see others copy it. It has to be properly resourced as well. We have had some complaints from some of the scientific advisers that when they try to set things up they are not always properly resourced.

Dr Cotgreave: I think it is important also not just that it is properly resourced but also that it is resourced in a way that makes it clear it is independent so that if the people on that committee disagree with a decision a minister takes they can say so openly and why that is happening. I think that is probably the way the Defra one is working.

Q941 Dr Iddon: Caroline, you have had some dealings with this, have you?

Dr Wallace: Yes. I think the Scientific Advisory Council is a great model. I would agree that if you are getting down towards specific issues it would be really important to have a lobby group or lay person on the committee to reflect a range of opinion.

Chairman: Martin, when the Royal Society gave evidence to us they were scathing about the use of lay people on the scientific committees, just going back to an earlier point. “Elevating public opinion over professional expertise and subordinating science to prejudice” was the comment that the Royal Society made.

Dr Harris: No; that was from Professor Grimston of Chatham House.

Q942 Chairman: Sorry; that was from Chatham. My apologies; I am confusing you with Professor Grimston's evidence, but you obviously do not feel that that is right.

Professor Taylor: No. I do not want to waste time. I have tried to make my point and I think for a standing advisory council the important thing is expertise, but when you come to specifics you should engage with the public and lobby groups and do it early on as well to help them help you frame the issues.

Q943 Dr Harris: Dr Cotgreave just said that he saw no problem with lay members of scientific advisory committees. I was listening carefully.

Dr Cotgreave: Might I clarify what I said?

Q944 Dr Harris: You can in a moment—and indeed NGOs. Maybe you should clarify it because the Royal Society of Chemistry were pretty clear in their evidence about what they thought of NGO representation on scientific advisory committees advising on policy as opposed to the policy decision-making committee.

Dr Cotgreave: I am sorry if I was unclear and I probably was, but if you are talking about an expert group of people on a scientific issue there is no place on that for someone who is not an expert in that issue. If you are talking about committees more widely there is no point in making a policy based on scientific evidence if you cannot bring the public with you, on nuclear fuel, for example. The Chief Scientific Adviser has said that whenever we build another nuclear power station we should bring the public with us. I think one has to get the balance right.

Dr Harris: But that is not a scientific advisory committee. That is an art of the possible advisory committee, it is a public relations advisory committee, it is a policy considerations advisory committee. Believe me, NGOs, where policy is being made, feed in. I would like to put to you, is it not giving them two bites of the cherry plonking them on a scientific advisory committee and then they have the stream of advice and lobbying that they do? I do not think that organisations like Mobile Phone Mast Kill Association have scientists on their advisory committees that are balanced scientists.

Chairman: Dr Harris is obsessed with my views on mobile phones.

Q945 Dr Harris: I did not mention your views, Chairman. It was a random selection.

Dr Cotgreave: Of course, there is a balance to be struck but just because one group of people with whom you and I might happen to disagree want to stifle the views of another group of people called scientists I do not think that is a reason why the scientific community should try and stifle the views of other people. I would not wish to give some rabidly zealous group on any one issue a say that they did not deserve, but you have to take a range of opinions when you are making policy.

Q946 Dr Harris: How do you make a decision? That is a subjective view. Surely scientific advisory committees should be populated by people who accept the scientific method, that is, looking at independent, peer review, evidence-based findings and not prejudice. Obviously, everyone has interests. Should that not be the dividing line?

Dr Cotgreave: Yes, I would not have a problem with saying that you cannot be on a Scientific Advisory Council if you openly say that peer review is a load of rubbish and the science does not work.

Chairman: We could continue with this debate and the committee will when it is deliberating.

Q947 Dr Iddon: I have one last simple question—well, the question is simple. For those departments that have them, noticeably not the Treasury, do you think departmental Chief Scientific Advisers have made an impact so far?

Professor Taylor: A couple of instances come to mind. I always like to go to examples where I can. I think of Frank Kelly who came to Transport, a mathematician like myself. He has really had some impact on the advice there. We think of Gordon Conway going to DfID but, as I said, I have often referred to Defra as an excellent example. We think that Howard Dalton has done a very fine job there. The Scientific Advisory Committee that it has introduced has gone very well. Joining this up with your other question, the one thing that maybe he has to do a little more is to make sure that it really is embedded in all the strategic decisions. I would make that point with general Chief Scientific Advisers as well. Science should be cross-cutting. It should be embedded in everything. You cannot imagine something in the Department for Health where you should not have the scientific advice there. It is good but it needs to get better. It comes back to the question I was asked at the start.

Q948 Dr Iddon: Could I have a brief response from the rest of the panel on that?

Dr Cotgreave: I would associate myself strongly with those comments. I feel that Chief Scientific Advisers are having an impact and I would single out Howard Dalton as having made an impact, although he has been there longer than the others.

Q949 Chairman: Of course, the Chief Scientific Advisers who have not been mentioned will note this very carefully.

Dr Cotgreave: They are probably not new.

Dr Pike: Our experience is good as well. What I am unclear of though is the extent to which in a sense the management processes have been embedded into their departments so that we can go through what I was talking about earlier.

Q950 Chairman: And that is the point that you were making as well, Caroline?

Dr Wallace: Yes, I would agree there. The Chief Scientific Advisers are a great thing. I am unclear at the moment how much individual Chief Scientific

Advisers input into horizon scanning and cross-departmental issues but in theory they are a good thing.

Q951 Margaret Moran: Professor Taylor, do I take it that you believe that as the UK's national academy of science you should have a more formal role in the scientific advisory process?

Professor Taylor: I would like to see it more used. On the formality of it I would be open to suggestions. As we are at the moment we have various working groups and evidence sessions that help Government on policy and from time to time we are commissioned by Government, such as on the infectious diseases of livestock and jointly with the Royal Academy of Engineering for nano-technology. We are looking to expand what we do. We have got our 350th coming up. We have plans for the future. We would like to do more.

Q952 Margaret Moran: Do you think the credibility of the academy in terms of giving scientific advice would be enhanced if your internal processes were more transparent in terms of electing fellows et cetera? Do you think that would help the Government give you greater credibility and interaction?

Professor Taylor: We would like to think the process for electing fellows is transparent. It is the names which are kept secret. I do not see the linkage, to be quite candid.

Q953 Margaret Moran: Dr Pike and Dr Wallace, we have asked the national academy of science what they think their role should be. What in an ideal world would your roles be in providing scientific advice?

Dr Wallace: One of the things we say in the Biosciences Federation is that we know we are responsive. We respond to consultation and we are occasionally asked to give advice at an earlier stage but not often enough and we would like to get involved in formulating questions that go on to produce consultations.

Dr Pike: From our point of view I guess the RSC represents a body that covers a wide diversity of chemistry interests and so we would certainly like to see one aspect being regarded as a one-stop shop for the chemistry sector in terms of giving advice. I think the fact that we have members who are able to give independent advice at no cost is an asset that we feel you could use. Going further down the advising process, we could also identify for you specific individuals whom you could then discuss matters with in more detail. That sort of use is the way I would see our body being used. We deal with DfID, DTI and so on on a fairly regular basis and so we are engaging with them but we feel we could advise more than we have done to date.

Q954 Chairman: Do you think then that the American style national academy of sciences and their formal role as a consultee within an advisory body to both the administration and indeed Congress would be much more useful?

Dr Pike: I think it would. As you are aware, we have what I will call ad hoc arrangements where we do meet people like yourselves to advise on chemistry aspects, not only to advise but also to have a feedback process to hear your views. My own view, and it is shared by a lot of other chemists, is that certainly in the future chemistry is going to play a very important role in terms of energy, the environment, sustainability and so on, and therefore some sort of more formal arrangement whereby we could deliver information and hear your views I think would benefit both parties.

Q955 Margaret Moran: Dr Cotgreave, Evan started referring to some of the lobby and pressure groups. What do you think the role of NGOs and pressure groups should be in influencing scientific advice or should there be any role at all? How should Government differentiate between the different types of advice it is getting?

Dr Cotgreave: That is a very good question because if you had asked me the question you asked the other witnesses I could not have answered in the same way because we are not an organisation in which you particularly have to be a good scientist to join. There are not criteria in that sense. We are a membership organisation, a group of people who happen to feel strongly on issues to do with science policy and anyone could join, and that is a very different thing from being an organisation where there are some quality professional criteria to join so we have to be treated differently. However, what we try to do as an organisation is present solid evidence. Sometimes we present opinion, sometimes we present evidence and we try to make it clear when we are doing that. Anybody who has got some serious evidence on a policy issue should be listened to. If you have something serious to say and you can back it up you cannot be ignored, I think, just because you are not a learned society, but they are different and they have to be appreciated as different things and I would not have said for the Government to come to us at an early stage. As Caroline said, you would expect the Government to come to the Institute of Biology at an early stage for advice on a lot of issues.

Q956 Bob Spink: In fact, since the RSC has criticised government consultation of scientists perhaps you would care, Dr Pike, to say how the Government can improve the means by which it gets advice from the science community.

Dr Pike: In a sense it follows from my earlier comments. From the point of view of the Government it is a question of being a more informed customer, as it were, in the way that I have described, but then to be more transparent in identifying the sorts of issues that are of interest to you and then coming to people like ourselves for scientific advice, and through more dialogue, I would say, between Government and ourselves we could volunteer information on the sorts of issues that we see. What we are arguing is for closer contact so that we can work collaboratively to identify issues and give scientific advice.

Q957 Bob Spink: I suspect the rest of the panel agree with that.

Dr Cotgreave: Could I just add something which is going back to what we said earlier on? That needs to happen not just at the top level of the Scientific Advisory Councils. It needs to be going on at the lower levels of individual civil servants working in departments on the daily grind of working on policies. I think that is the area where there is great scope.

Dr Pike: One of the big problems is that from your point of view there are loads of bodies that you could talk to. In the same way, I guess, there are quite a number of government departments and entities that we could talk to. One of the big issues is how do we prioritise the way in which we interact? Even that process has to be improved. How do we focus on the priorities so that we can deliver the scientific information we want? I think it is going to come about by top-level interaction but interaction at this informed lower level as well. I guess in a sense we have both got to work at it.

Professor Taylor: I would agree completely with that but with a couple of illustrations. I agree that at the high level to a certain extent the onus is a little bit on Government to try to come back to us. We have tried quite a lot to make contact with Government and I would like to see them respond a little more to our initiatives. At the lower level an issue that has not been aired properly yet to this committee is horizon scanning which is terribly important.

Q958 Bob Spink: We are coming on to that in a moment.

Professor Taylor: I did not know that. Should I bide my time?

Chairman: I think so, yes.

Q959 Bob Spink: Is it possible to promote and improve the interaction between these very tightly focused and introvert scientists and these very generalist and extrovert policy makers who are seeking a quick fix?

Dr Pike: It is educational on both sides. I realise that there are scientists who can be so focused on the detail of the science that they have difficulty in communicating with the generalists. By the same token the generalists within Government need to understand some of the very basic scientific principles so that there is a dialogue. Otherwise you have meetings where ships pass in the night and there is little interaction and that is what we have to address.

Q960 Bob Spink: Do you think the policy makers are too often looking for a quick fix? We will come back to risk assessment and all of that later, I am sure, but do you think that policy makers are looking for a quick fix and are not really tuned into listening to very tight and focused scientific advice?

Dr Wallace: The Biosciences Federation would agree with that. Given that Government policy advisers are not in post very long within departments, they are looking for answers within a parliamentary session or within their period of

contract in the department. We would say that often they are looking for a quick fix and not horizon scanning well.

Q961 Dr Turner: Dr Cotgreave, you have been known to comment that there is a need to distinguish between decisions which have been based on evidence and those that are judgment calls.

Dr Cotgreave: Yes.

Q962 Dr Turner: Do you think the Government does this very well at present or do you think that when there is a grey area the role that scientific advice is playing in that decision should be made more transparent?

Dr Cotgreave: The answer to the first question is that I do not know because the answer to the second question is yes: it needs to be more transparent and I do not know whether the Government is making those distinctions as clearly as it should because the process is not transparent. If you take something like bird flu/the dead swan in Scotland, once you know you have got a dead swan with bird flu you could do everything from, at the one end, nothing to, at the other end, killing every chicken and turkey in the UK to stop the spread. We have to do something in between those two things and you have to balance the risk that the virus will spread with the risk to the poultry industry and all the other associated risks. How you judge that balance is a political decision for a minister. How you then achieve the balance the minister wants is a scientific question and there may very well be a very grey area because the scientist may say either, "I do not know", or, "I cannot deliver what you want but I can do this or this instead". I do not think the distinction is clear enough at the moment between those judgment calls and those evidence-based scientific opinions.

Q963 Dr Turner: Yes, I can think of several controversial decision-making areas where that should apply, badgers for one, new nuclear power stations for another.

Dr Cotgreave: Exactly.

Q964 Dr Turner: Clearly there is room for improving the decision-making process there as far as evidence collecting and evidence presentation are concerned.

Dr Cotgreave: Yes, I think so.

Q965 Dr Turner: Dr Pike, the Royal Society of Chemistry have had a view on this as well. Do you want to add anything?

Dr Pike: What I would add is that there has to be good science in the first place in that if we take this specific example it would be good, and I am sure it would be possible, to have said internally before any messages were sent out, that there is, let us say, a five per cent probability that so many people might succumb to bird flu and there is a 90% probability that it could be zero or just one. In other words, internally, and it may have gone through this process; I do not know, the science should have said, "Look: these are the sorts of probability distributions we are talking about". Get that right

and then you can ask yourself, "How do I communicate that in an easily understandable way to the public?". I am not convinced that was done either. In summary, get the science right but understand probabilities. Probabilities turn up so often that it is very worrying that so few people understand what probabilities really mean. Get that right and then communicate correctly in a way that the lay public can understand.

Q966 Dr Turner: Not easy. We have various methods of deriving evidence. It might be a double-blind trial or it might be simply a literature survey or there might be a gap. How do you balance this?

Dr Pike: One can make judgments. We all work with imperfect data, and I guess I am generalising when I say that, but you can usually reduce a problem into a scientific context. Even if there are gaps you can derive, for example, probability distributions. It is a combination of literature searches but also good meetings. I come back to my earlier point, that if you do have a issue to do with, let us say, the probability of bird flu occurring more extensively in this country, the probability of CJD developing, you bring in experts, you do literature surveys, but most crucially you ask the right questions—the what, the how, the why, the what if, is this not inconsistent with that? There is some evidence that that does not go on as it should do because the outcome as viewed by the public is often statements which I think most scientists would say are quite incorrect or exaggerated and are worrying to the public. The outcome suggests that there is not a well defined process by which you go from the science to the public delivery of the outcome.

Q967 Dr Turner: Do you think there would be a place for some recognised systematic process for weighing evidence and the approach to a problem, especially given the fact that systems are no better than the people that operate them, so it is obviously crucial on any given problem to have the right person in the right place to ask the right questions. Can you see ways so that the public can see that this is being done systematically and give them greater trust?

Dr Pike: I will be very specific. I will not mention the country but in my more recent past I was working to help a state oil company in its interactions with highly specialist oil industry engineers, so there is an interesting parallel here. We have specialists dealing with, let us say, the less informed as they work within the state oil company, and what we developed was a formalised process by which information came in and was examined and implemented. That was all documented. It was all simple stuff, schematics, which meant that everybody in that state oil company department understood what would happen when information came in, what was triggered, what meetings were held, what sorts of questions were asked at meetings. It was formalised in that sense and then, having established that process, we trained the staff to work the process, gave them the skills. I see a parallel that could be applied here in government. Formalise your

processes, do not over-complicate it with lots of words. Just have simple schematics, simple gate-type questions—what, why, what if—and continually train people. That is possible. I have done it and I have seen it done by other people. Then you can track the way in which the information comes in and announcements are made to the public effectively. That would be the whole process.

Q968 Dr Turner: Perhaps we should incorporate this in the Civil Service college.

Dr Pike: Indeed.

Dr Turner: The other problem, of course, is that there is frequently a gap in knowledge. Without having extra policy-related research done you will not be able to fill that gap except by postulates. Do you think the Government is well placed to commission policy-related research? Do you think, for instance, it should ring-fence a pot within the research councils or should it be something separate? It seems to me there is a gap there. Do you think the Government should address it and, if so, how?

Q969 Chairman: Could I perhaps ask you, Professor Taylor, to come in on that one?

Professor Taylor: I can think of a very fine instance of that and that would be nano-technology where the effect of nano particles on the environment is something of an unknown and it could be very important indeed. What has had to happen at the moment is that we have had to try and commission research, if you like, to fill the vacuum so that the right decisions can be made. The problem is that we make these recommendations and Defra have come forward with some very good proposals demonstrating fine joined-up thinking but they have not earmarked the money. They have said that there should be research on nano particles and their effect on the environment. Nano-technology is a very fast-moving and active area. In the tensions of a competitive environment of bidding for grants something like that could come really rather low down at research councils and would probably not easily get funded. I therefore agree with what you say but it needs to be earmarked, ring-fenced money and then this whole project would be just going that little bit better, but at the moment I am afraid it is going to run into the sand.

Q970 Dr Turner: So there is a gap there?

Professor Taylor: There is a gap.

Chairman: But Des's question was also about who should control that ring-fenced money. Should it be David King and his team? Should it be the Chief Scientific Adviser? Should it be the research council? Who should control it?

Q971 Bob Spink: Or the Treasury.

Professor Taylor: First of all I would like to see what the relevant ministry had to say and then maybe the Government's Chief Scientific Adviser could step in if necessary.

Q972 Bob Spink: Oh, can he?

Professor Taylor: Yes.

Dr Cotgreave: We have argued for a long time for a ministry of science that dealt with this kind of issue. I think now that the OSI is considerably more than half of the DTI's budget we are moving towards a ministry of science in all but name and I think that not research councils but that organisation is better placed to commission research than some of the departments that do not have a scientific culture.

Dr Turner: That is very helpful.

Q973 Bob Spink: We are with you on that. You can talk about horizon scanning now. We would like to ask you about the management of scientific uncertainty, and of course that is a function of probability and outcome and consequences and outcome and all of that. Do you think the policy makers handle scientific uncertainty well?

Dr Cotgreave: I do not think I want to answer that. I think Martin would be better placed to answer it.

Q974 Bob Spink: I mean policies mainly on climate change or on bird flu.

Professor Taylor: Exactly. I was going to come in at the level of specifics first and then perhaps move to the general afterwards. I have in front of me three specifics that leap to my eye: climate change, where, as you say, there is scientific evidence but it is far from definitive as yet, but such is the huge, possibly irreversible, risk to the planet that action should indeed be taken, so I believe the Government has acted well on this.

Q975 Bob Spink: I think, Martin, that someone said that it is becoming more definitive as the hours tick by.

Professor Taylor: I would not doubt that. I am trying to be generous. I am a complete advocate of trying to do what we can. I have already spoken to nano-technology where there was uncertainty. The other one that I remember, because we recently have done some work with the Food Standards Agency, is the way things were done for the BSE 30 month rule when initially it was quite a knowledge vacuum, just as Des was saying. That is another one I could have picked on. The risks were very serious and robust measures had to be taken while more research was done and then they were able to re-evaluate what was to be done. The ones I am giving you, I am afraid, are the three successes, so I am afraid I have not got a great criticism. Can I just come down to the lower level of data, the horizon scanning? I am always a little bit worried when there is a lack of knowledge, a lack of scientific evidence. This might just be cause for inaction; you will see that in our submission. One way to try and get round that is to try and spot the issues well in advance and commission or garner whatever research is out there. The Royal Society has its own horizon scanning. From what I can gather most of the departments have it, certainly Defra has, and of course there is the OSI that runs something sometimes called the scan of scans, so there is a lot of it out there but I do not

honestly believe it is terribly well joined up and that is why I tried to bring it in at your earlier question when I thought it could be joined up a little better.

Q976 Bob Spink: How do you spot issues on the horizon scanning scale across Europe? For instance, are you looking at what is happening in Europe?

Professor Taylor: At least half of our scanning is done through the cutting edge scientists that we are in contact with. We are constantly asking what is coming up.

Q977 Bob Spink: So would you be looking at things that are happening in Europe, like, the REACH Directive or the Physical Agents Directive and horizon scanning and saying, "Where is this going to lead us?", and if so, how did we end up not spotting the MRI problems with the Physical Agents Directive?

Dr Pike: Certainly on the chemistry side there are various organisations like SusChem which is looking at sustainable chemistry in Europe. That is looking at those sorts of issues, what is going to happen in the more distant future. There are these collaborative bodies that are doing that. If I could just go back to the thrust of your earlier questioning and be very specific, when it comes to the future and where things may be going there are two very important examples I would like to bring out. One refers to definitions, which may sound rather dry, and the other refers to process. Definitions is to do with the oil industry and the specific example I think I will give you, and I have mentioned it to the Chairman before, is that people talk about proven reserves, but how many people really understand what that means? Proven reserves of oil strictly mean that volume which has a 90% chance of being exceeded. Very few people understand that and then when they see the proven reserves of country X and country Y and country Z they just add them up arithmetically and that is completely wrong. They have to be added up probabilistically. What you have is that the whole industry is looking at the way energy is going, but even the most basic definitions, even the most basic numbers, are incorrect. We probably have twice as much oil and gas available as most people in the street and in fact most environmental analysts think. The individual companies understand the picture but very few people look at the global picture. The message there is that in looking over the horizon we have to get things right as basic as definitions and numbers and we are not doing that. The other example is one of process. You will have seen a lot of debate about green chemistry and green fuels. Again, what few people really understand is that to produce this hydrogen or this bio fuel, to produce this GTL diesel, at the producing country you have to stick vast amounts of CO₂ into the atmosphere. Looking at the well-to-wheel process, in other words, the whole process, it is certainly not green chemistry at all. It is something completely different. People are making judgments and even research decisions by looking at a very small part of the overall process. In

looking over the horizon we need to consider what is the whole process from A to B before we invest in that or do further research.

Chairman: I will stop you there because we are running out of time. Can I come on to Dr Harris.

Dr Harris: Before I ask you about the precautionary principle, there is just this outstanding issue of the role of government in commissioning research. In the *Independent on Sunday* two weeks ago the Government announced we wanted to have more home births and the Health Secretary said that she was going to commission research "to support that policy". Do you see that as a common problem in terms of politicians, not just government, in fairness? How do we deal with that problem of commissioning the research to support a decision?

Q978 Chairman: Can I ask you to be very brief in answering these questions.

Professor Taylor: I think this is a case *inter alia* of trying to get the terms of reference for your research right. It is skewed in the way that you put it. Similarly, it is very important to get the membership right.

Q979 Dr Harris: I did not put it like that; she put it like that.

Professor Taylor: I understood that. But when you said it a little snigger went round the room because the term of reference is clearly wrong. I think there is a role for the learned societies and external scientists to help form the terms of reference when studies are made and also to check that the membership has the right capacity to it.

Q980 Dr Harris: I want to ask you about the precautionary principle because your evidence, as the Royal Society evidence talked about the precautionary principle having several conflicting definitions, but then in your evidence you talk about the precautionary principle, not a precautionary principle. Should it be flexible and undefined and vague or should it be more defined and therefore less flexible?

Professor Taylor: All I can say is that when we speak to the precautionary principle I think we are speaking of the generic one, as I think has been discussed in this room, where there is a paucity of scientific evidence and what do you do, how do you handle that. There are formal definitions apparently in the document by POST and that is where the plurality comes from. I think it would be good if we could all fix on one definition.

Q981 Dr Harris: Do you think the Government has done that across departments?

Professor Taylor: I am not aware of that. That would be helpful.

Q982 Dr Harris: They talk about a precautionary approach and define that.

Professor Taylor: Maybe that is a thing we could take up with Dave King to try and clarify what is meant by fixing the precautionary principle.

Q983 Chairman: I think if the Royal Society could do that and actually define the precautionary principle you would do mankind a huge favour, and particularly Dr Harris.

Professor Taylor: I am not sure if that is a joke or homework!

Chairman: Both.

Q984 Dr Harris: The Royal Society point out that the misapplication of the precautionary principle can cause real harm. I think it was the Royal Society of Chemistry that gave two examples, one of which was the precautionary approach taken with regard to DDT which it is said, and there is good evidence, caused millions of deaths from malaria without any good evidence of benefit, and other examples as well. What do you think the way forward is on the precautionary principle?

Dr Pike: The way forward is obviously to think through the policies or the decisions one makes. In other words, with DDT there was obviously a short-term benefit and there are other examples where there are short-term benefits but other things come into play. One has to think through what those are before you actually make decisions.

Chairman: Margaret?

Q985 Margaret Moran: We have touched during this session on the role of the media in terms of shaping public perception, but can you just tell me what you think is the primary role of public engagement? Is it to shape their opinions, is it inform the public or is it to receive concerns back from the public? How can we manage the expectations of the people we are consulting so that we get the best scientific outcomes?

Dr Cotgreave: I think the answer is probably all three of those things. I think you need to shape public opinion, you have got to lead, but you have also got to take public opinion into account, hear what it is, and if you want to shape public opinion and know what it is, you have got to inform people of the basis behind the things that you are doing. I think it is probably all three of those things. Sorry, what was the second part of the question?

Q986 Margaret Moran: How do we manage the expectations of the people being consulted?

Dr Cotgreave: I think you have to be a lot more honest with people than we have been in the past. BSE is a classic example of this where Ministers went round saying, "Beef is perfectly safe," and John Gummer gave his daughter that beef burger that she did not want to eat. That is not a party political point. I think ministers of any persuasion would have done that at that time. Nobody really believed him and believed the Government and they were right because in fact the Government was misrepresenting the level of uncertainty that the scientists had given them. The Scientific Committee had said that there was a remote risk that this could be dangerous. Nevertheless, the Government went round saying it was perfectly safe. So I think you have got to be much more honest with people. My reading of the way things are done these days is, for

24 May 2006 Dr Richard Pike, Professor Martin Taylor, Dr Caroline Wallace and Dr Peter Cotgreave

example, on bird flu you see Dave King on the news, on the telly or in the paper much more often than you ever used to see Bill Stewart in the days of BSE. You see the scientists and you know "this is someone whom I can trust. This is not a party politician trying to sell me a beef burger; this is someone being honest with me and hedging their comments around a little bit of uncertainty." You cannot manage expectations by telling people it is perfectly safe when everybody knows that nothing is perfectly safe.

Dr Wallace: We would agree that one of the main objectives of communicating with the public is to be honest about uncertainty and stop that turning into panic. The MMR issue rumbled on was because it was not addressed properly. An example of when it was done well was in the 2001 foot and mouth

outbreak with the concern that burning carcasses on pyres would affect the amount of dioxins in milk. John Krebs immediately appeared in the media, explained what the risk assessment was, what the proposed monitoring programme was and suggested that people consumed milk from not within a two kilometre radius of the pyres, and panic did not arise.

Chairman: I am very sorry but we have to come to the end of this session. Can I thank you all enormously for your contributions and forgive us for the shortness of our time with you. We very much appreciate not only your contributions but also the written evidence which you constantly give to us. Professor Taylor, if you can resolve the issue of the precautionary principle you will do mankind a great favour.

Witnesses: **Professor Tim Hope**, Professor of Criminology, Keele University; **Mr Norman Glass**, Chief Executive, National Centre for Social Research; and **Mr William Solesbury**, Senior Research Fellow, ESRC Centre for Evidence-Based Policy and Practice, gave evidence.

Chairman: Good morning to our second panel. Professor Tim Hope, Professor of Criminology at the University of Keele; Norman Glass, the Chief Executive of the National Centre for Social Research; and William Solesbury, the Senior Research Fellow at ESRC and the Centre for Evidence-Based Policy and Practice. This is a panel that should have all the answers and I am sure you were fascinated by the comments that were made earlier. I am going to ask my colleague Brian Iddon if he will begin on this session.

Q987 Dr Iddon: There are those who say that evidence-based policy-making, which the Government is creating a fuss about at the moment as you well know, is incompatible with the realities of the electoral cycle. I know Tim Hope has had something to say about that in the past. Do you agree with the statement that they are incompatible or is there some compatibility feasible?

Professor Hope: I do not think anyone would demur from the general expectation or hope that politics and policy could be informed by rational debate and rational information. I think the close coupling of politics on the one hand and science on the other, or the utilisation of knowledge on the one hand and the production of knowledge on the other, which has occurred during the development of the idea of evidence-based policy-making, raises certain questions and concerns about protecting and safeguarding both the quality of knowledge production and the quality of knowledge utilisation. So my concerns and my worries are about the close coupling of these two activities, largely because, to address your point, both of course are legitimate activities and have their own forms of public accounting, if I could put it like that, politics through the political process and science through the scientific process, through the process of peer review and so on. I think when one couples them together the, if I might put it, power and influence of politics

tends to infect the procedures and processes of knowledge production of science, to its detriment, and I think to the detriment of the public interest.

Q988 Bob Spink: Could I just interject. Are you really saying that sometimes the Government are selective about what evidence they choose and what evidence they use?

Professor Hope: Yes.

Q989 Chairman: Or does not use it at all?

Professor Hope: Or does not use it at all. The process of selecting evidence is a common one for both politics and for science itself. The discipline of science, the practice of science is all about selection, so it is not that government is any more or less selective than science is selective in terms of how it produces knowledge, but that there are different principles involved.

Q990 Dr Iddon: Norman Glass, you have had difficulties with this concept of marrying the two together, have you not?

Mr Glass: Yes. Maybe I just have a sunny disposition but it does not really bother me as a big issue that there is a difference between the facts. In social research facts are always questions of probability as well. I do defer a bit to our physical and biological scientists. I wish I had the chance to do experiments in the way they do experiments. The facts that we gather tend to be more fungible. You believe them through the weight, the repetition, the quantity of things happening much the same way rather than any particular piece of fact that emerges at a particular time. Then the fact is that politicians like the rest of us, find some sorts of facts easier to accept than others when they tend to confirm strongly held beliefs that they have acquired through lots of other ways of acquiring beliefs. So I just tend to think that is life. You produce facts in as rigorous a way as you can and you hand them to people with

proper explanations of what you think they mean, but politicians have to make decisions on the basis of a lot of things—past commitments, their own innate prejudices, the views of their colleagues, what they think the public will bear. I think you do a very difficult job and I do not envy you. I do not find this kind of contrast between hard science, which shows things, and then what we do, which is always played around with by politicians, terribly difficult to live with. In the end—and this is what keeps me going—if the facts continue to point in the same way people will change their opinions. It may take a while but it will happen in the end. There is only so long you can go on believing the impossible. It wears you down after a while.

Q991 Dr Iddon: In our case it is proportional to our majorities. William Solesbury?

Mr Solesbury: I think part of the problem arises from the term “evidence based”. It is also a term that is in the title of the Centre where I work but it was given to us by the ESRC when we were funded initially. I think the concept that policy should be based on evidence is something that I would rail against quite fiercely. It implies first of all that it is the sole thing that you should consider. Secondly, it implies the metaphor ‘base’ and implies a kind of solidity, which I agree with Norman is often not there, certainly in the social sciences although I think to a great degree, bearing in mind the earlier discussion on probability, not always in the natural and biological sciences. If we have a concept of evidence being able to inform policy, that is something that we can all feel much more comfortable about because in that context evidence is not the only thing that informs policy. I do not need to lecture you on the nature of politics. I referred in the memorandum to conceptualisation of the four Is which is policy shaped by information, interests, ideologies and institutions. Certainly in the training and consultancy work that I have done with government departments, I have always found that a very fruitful way of getting them to think about a particular contribution that evidence and information can make and how it can be weighed against other things. I think the problem is also not just in the terms. The Patricia Hewitt example in the previous session is a nice example of the curious way in which politicians and the civil servants who advise them are rather bad at saying we have reached a decision by weighing these things up and have chosen, because of the nature of the evidence, to give less weight to that and more weight to these other considerations. There is a curious desire on the part of politicians and perhaps ministers in particular to have the evidence very firmly on their side. That leads I think to these rather perverse statements like the one that was quoted of Patricia Hewitt that she wanted to have the research that demonstrated it was a good thing to have home births. There are all sorts of other reasons surely why home births would be a good concept without necessarily having to be demonstrated to be scientifically more likely to produce safe babies or reduce mortality.

Mr Glass: Can I come in on that just to follow up on the point about Patricia Hewitt. I do not know the context in which Patricia Hewitt made her statement, but you can imagine a context in which it would not be absurd or anti-scientific or something like that. For example, if you decided on the basis of evidence or prejudice, or whatever it might be, that you were going to have a policy of encouraging home births, and there has been a lot of stuff for ages about whether mothers prefer home births even if it is slightly riskier (because we do not all try to absolutely minimise risk) so if you have decided on the basis of this kind of evidence that home births were a policy that you were going to promote or encourage or support, then it might be sensible to say, “And we want evidence that will support this policy in the sense if we are going to have this policy we may need to know how best to implement it, how it should be delivered, what kinds of ways of delivering it are less risky than others.” I am not defending Patricia Hewitt. I do not know the context in which she made that statement. I only saw what was in the papers and a long history as a civil servant told me not to believe what is in the papers. So I would be careful about saying that what she said was anti-scientific or contrary to the notion that evidence should inform policy. It may be that what she said was indeed that and of course it may have been an inopportune thing to say. I have worked with Patricia Hewitt in the past and I do not think she is the kind of person who just rules out evidence on the basis of her subjective prejudices.

Q992 Chairman: I want to come on to you Professor Hope. You have been extremely critical of the way in which the Home Office has used your research and the way it has misinterpreted your research and presented it as evidence to support policy. What evidence do you have that this is a systemic problem within the system or is it just a one-off?

Professor Hope: I have no other contemporary evidence other than my own experience of observing the behaviour, as it were, of the Home Office in this regard, although I did serve as a research officer in the Home Office from 1974 to 1991, so I have my recollections to draw upon in that regard. There are two things I would want to say about my criticism. First of all, the criticisms I have levelled against the Home Office have been in the context of a scientific discourse or a scientific set of criticisms. The circumstances that arose in this case were, in simple form, the Home Office researchers acquired data that we had already analysed on the contract to the Home Office in connection with evaluating the Reducing Burglary Initiative. The Home Office acquired the public data that we had used (that is the crime figures) and re-analysed those figures and produced a set of findings on the basis of their analysis in an official Home Office publication, Findings 204. I had pointed out prior to the Home Office publishing this that I thought their interpretation differed from our own and I had identified where I thought the difference lay in terms of our respective scientific methodologies and the bases on which we had produced our work and the

bases on which the Home Office had produced their findings. Despite that, they proceeded to publish their own analysis. The inferences from that analysis were, let us say, rather more congenial and favourable to the political interests in this programme than were my own. I have set that out more fully in an academic paper published in the journal *Criminology and Criminal Justice* which I have provided to your Clerk.

Q993 Chairman: We have got that. My question to you is do you feel that that is systemic within the system or was that just a one-off where it was desired to have a political result?

Professor Hope: I would like to believe that it was a one-off but I have no specific evidence except I suppose hearsay and certainly understandings I have from colleagues within the British Society of Criminology, our professional body. At the British Society of Criminology conference in the University of Bangor in July 2003 there were a number of papers to be given by academics on the basis of contracted work that they were involved in, as I was, for the Home Office. A number of the researchers were advised not to present their papers at the last minute even though they had been advertised in the programme by Home Office officials.

Q994 Chairman: By the Home Office itself?

Professor Hope: Yes, so that would suggest to me certainly there was at that time or in those circumstances something rather more systemic about the desire to control the release of information and analysis, certainly about the Crime Reduction Programme.

Q995 Chairman: Norman, I know you were heavily involved with the Sure Start programme. We had frequent statements by ministers that this was an evidential programme, the evidence had come from the United States where they had got very significant achievements through the programme there, but you claimed that there was no evidence or there was little evidence. The question I ask you is: does it matter if it was a good programme?

Mr Glass: I am not sure I could have said that since I was the one who assembled the evidence so there may be a misunderstanding here. I pick up on William's point which is "evidence influenced". Like him, I do not like the phrase "evidence based" it is not the way policy gets made. In the case of the Sure Start programme what we did was we followed a fairly open process. We were influenced very heavily by a series of experimental studies in the United States, many of them different but relating to early years programmes, which appeared to show significant improvements on a number of measures. That is the United States, they are experimental programmes, and you cannot just take them over and apply them here. We were influenced by issues of evidence from our own birth cohort studies which showed that many of the influences in people's later lives were present in the first seven years of their lives and that those were the most significant influences affecting people's lives, in so far as you could see

what affected people's lives. There was a lot of evidence on the importance of things like parental attachment and so on. There was a lot of stuff around of that kind which did not point to particular programmes but nevertheless pointed in the direction of saying that early years mattered and probably mattered more than interventions you could make later on in people's lives and that there were things that appeared to be effective which were being carried out elsewhere. That is where you get to the point of saying, "Well, at that point, do I let go of the billiard cue and actually hit the ball or do I wait around for more evidence to come in and try and do it?" I think our view at that stage was that there was sufficient evidence, if you like, adjacent to the issue of whether an early years programme could be successful which was convincing to think that we ought to have some sort of early years programme which we did not previously have. I am sorry if I have been reported as saying I did not think the evidence was there because. In Sure Start, because of the way we did the process, we had three public seminars to which we invited academics, we had ministers present at some of these seminars, we had a literature review of what was known about early years which we commissioned from the Thomas Coram Research Unit and so on. In that particular programme there was more of what I would call evidence around than there had been for some other programmes with which I am afraid I have been associated in the past. In that case I think there was a lot of evidence but what there was not—and that gets back to our social sciences—was experimental evidence of randomly allocating people to a programme and not to a programme and then seeing what happens. We have very little of that in this country. There is quite a bit of it in the United States. We tend to have the policies; they tend to have the evidence. It is a rather interesting mix. For various reasons, and it is a point I would try and make to the Committee, ministers and governments in this country, both Conservative and Labour (there is no difference) have been very reluctant to allow social scientists to carry out experimental programmes where people, with their consent of course, are allocated at random to a programme and then to a control group. We have done very little of that. That would be much stronger evidence. It is still not clinching but it would be much stronger evidence.

Q996 Chairman: Just before I bring Robert in here, could I have a very yes or no answer really. I can understand a policy being based on a fairly small body of evidence in the case of Sure Start but rolling it out on the scale at which Sure Start was rolled out without in fact—

Mr Glass: Now you are coming more to my point.

Q997 Chairman: without continuing to monitor and gain the evidence and then say is this worth the investment that we are making, would you saying that is an issue?

Mr Glass: I certainly believe and I argued strongly at the time that there was sufficient evidence to have a small Sure Start programme. I think we started off

with a programme of 200 which is not that small but was still small. My view—and I argued it at the time when I was in the Civil Service and I have argued it subsequently—was that we should have learned much more about the experience from those 200 before we rolled it out on any scale. I do feel that we have rolled it out on the basis of inadequate evidence about how best it should be done as much as whether it has an effect, and being clear about the kinds of impact we wanted this programme to have. If that is what you are saying I said, then I agree with that. We rolled it out too much, too fast and too inadequately reviewed.

Q998 Chairman: That is what I understand you to be saying.

Mr Glass: I am sorry I misunderstood before.

Chairman: Robert?

Q999 Mr Ffello: Before I get into my question I just wanted to pick up on the point about the social science experiments. To what extent do you feel those are hampered by ethics committees, for example, saying “You cannot go off and do that. You have to stop people having that experience because it would be better if they did not have it?”

Mr Glass: What you have just said is very close to my heart. We are increasingly running into this issue where ethics committees, which are largely of medical origin, are applying the same sorts of criteria to social research that they apply to medical research. We have an ethics process in our own organisation. I think most academic researchers are subject to them. The problem is that in this case I think that we are being subject to a level of ethical scrutiny which is appropriate to a process where people may live or die but is not appropriate to a process about whether they will get £10 a week or £5 a week. These ethical committees consist, I have to say—and I am conscious that Dr Harris and for all I know many others are medical practitioners around here—of medical practitioners, many of whom have very little familiarity with social science or the methods of social science and tend to bring with them the concerns (quite rightly, that is what they are on those ethics committees for) of their experience in the medical sciences. We usually get the through the ethics committee with no great difficulty but it is very time-consuming and it does, I think, hinder many of the kinds of experiments that I would like to see happening. We have had two major policy experiments in recent years, the first ever on a major scale, both of them to do with people with long-term sickness and disability, and I think both of them have been very, very rigorously carried out. Ministers agreed to them in the end but it took a long time to get ministers to agree to them and it certainly presented very serious operational difficulties and therefore cost to put it through the conventional ethical procedure.

Q1000 Mr Ffello: Professor Hope, you looked as though you were perhaps disagreeing with some of those comments.

Professor Hope: I just wanted to raise a question over the assumption that the experiment in the form of a random control trial is necessarily a gold standard of deriving evidence. That is in a sense irrespective of arguments about the ethics or practicality of experimenting in the social world with human subjects. There is a considerable body of opinion within the scientific community, within the social scientific community, across the disciplines, and some considerable discussion about whether, if I can put it like this, the RCT does what it says it does on the tin. This I think is part of my general point which is that it would be perhaps as foolish to move simply to a rather slavish adoption of a gold standard of the social experiment as though that somehow resolved issues of policy, resolved issues of practicality, resolved issues of choice, resolved issues of evidence and reliability which seems to make a fetish out of a sort of scientism that is perhaps inappropriate.

Q1001 Mr Ffello: I am conscious I still have not got to my questions. I should say I come at this with a slightly vested interest in that previously I ran a children’s charity that worked in the area of intervention with young people with emotional and behavioural problems where we found that getting in early was much more effective than later, and we were constrained by the clinical psychologist who was working with us having ethics committees.

Mr Glass: I do not disagree with Tim. I have been advocating these things for 30 years since I was a researcher in the University of Newcastle. I think two in 30 years does not count as an overwhelming monolithic method. I would even settle for four. If we had four I would think I was doing well.

Q1002 Mr Ffello: I shall move on to the main thrust of my questions. We have had evidence from the Campaign for Science and Engineering that said it is only possible for the Government to handle risk and science appropriately if it has a sufficiently expert and critical in-house capability to allow them to ask the right questions. Do you believe that the Government has sufficient in-house expertise of science to be that intelligent customer of scientific advice and research?

Mr Solesbury: I would make a distinction in terms of in-house capability between scientific staff, which of course have increased vastly in numbers and the budgets which they command to commission work, and the traditional Civil Service policy-making people. I think the problem in terms of being intelligent as a customer is very much on the side of the latter in the sense that I do not think there is, as yet, very much, or at least not a very sophisticated understanding of the occasions when evidence is useful, the sort of evidence to be obtained, how to evaluate evidence when it is available, how to interpret it, and how to weigh it. In that respect, I think it is worth drawing attention to a current exercise led by the Cabinet Office called the Professional Skills for Government initiative which has been redefining the competence frameworks for civil servants at all levels. One of the interesting

aspects of that is that there are four core areas of competence which are being defined at all grades. One of the core competences that all civil servants are meant to have is the capability for the analysis and use of evidence. If you look at the framework it says what this means for a permanent secretary, what this means for an under-secretary, what this means for a principal. I am sorry I am using rather old-fashioned terms for the various levels. At the bottom level clearly people are meant to be able to understand and interpret evidence. At the high level people are meant to know when one should be looking for evidence and where to look for it. That is quite promising. Whether in fact that is actually finding its way through into the training and, more importantly, the reward systems in the Civil Service, a more sophisticated understanding of when that evidence should be sought and how it should be used, I really cannot judge. It seems to me that recognising analysis and use of evidence as one of the core skills of servant servants is a positive step and it might produce some benefits in time.

Q1003 Dr Turner: What you are describing is a sort of generalist competence. What about specific expertise within departments which is relevant to those departments? Do you have meaningful ways of measuring that level of expertise to decide whether it is adequate? If not, what do you do about it?

Mr Glass: I used to manage at one stage the social researchers in the Department of Social Security and subsequently a body of social researchers in the Department of the Environment, as it then was, on the housing programme. My appreciation then was that these people were on the whole well trained to make judgments about what was good social science, and what was value for money in terms of what the Government was buying. The issue was rather more the question of their influence on the people that Bill was referring to. The old Civil Service phrase about “on tap, not on top” that eggheads/boffins should be on tap, not on top, is still very much alive and well in that context. In many cases it was perfectly fine but the difficulty in some cases of arguing with policy customers about the consequences of bias in evidence, which is what we social scientists are essentially hunting down day after day, for many policy people this seemed a kind of geeky interest. I remember in the Treasury the geekier economists were referred to as “v-necks”. These were people who came into work in v-neck sweaters and obviously were not entirely reliable! There is still evidence of thinking of course these are people who are interested in that sort of thing but it does not matter in the practical world, but of course it does. It is absolutely crucial. If you are basing your evidence on unrepresentative, biased samples then you cannot believe a word. In fact, it is worse than knowing nothing. Knowing things that are not so is worse than knowing nothing at all. The difficulty is not so much in the capacity of the people that Bill refers to, and there are a lot of social scientists (although I think they are given less and less capacity to influence), it is the business of having a lot of people who are in the driving seat who think they

know things they do not actually know and whose manifest confidence about their own ability you have no doubt experienced in other evidence sessions.

Q1004 Chairman: We could not possibly comment! You can; we cannot. Tim?

Professor Hope: As I said, I served in what was once called the Home Office Research and Planning Unit. It was not a directorate. I was certainly proud to be a geek or a v-neck and I may even have worn denim at some point during my career.

Q1005 Chairman: Could I just say one of the members of the public has a v-neck and I would not want him to feel—

Mr Glass: I very rarely wore a tie. I think it is part of the point I am trying to make which is this distance in itself was a protection for the researchers, as Norman has identified, and in some ways a protection for the politician and the policy-maker too. What I think has happened within government, certainly within the Home Office at least, as I infer it, is that the institutional position of government researchers, paradoxically, has become, as research and knowledge has become more important, weakened as professional civil servants or as experts. I think this renders them vulnerable. It renders them very vulnerable to pressures both from the political process—greater temptation to interfere and to know about and to steer the production of knowledge—and it also, I think, renders them very vulnerable to outside pressures from scientists and scientific groups who wish to influence the direction of official research. I could describe where I think these institutional weaknesses have developed. They have certainly developed from around the early 1980s onwards. Amongst them, one of the transformations I experienced myself was a far greater direct interest amongst ministers in both what research was commissioned and what its findings were to be prior to their publication. I suppose a general diminution of the Rothschild Principle that Norman was talking about which during the 1970s had governed the arrangements. I also think there have been some unintended consequences, paradoxically, of competitive tendering and procurement. The old arrangement was essentially a grant arrangement with outside academics, and the boffins in the backroom also conducted their own research. I do not think they were particularly less transparent in the conduct of these but the product of that was that I believe it created much greater partnership between the researchers, the scientists outside government, the policy customers, the administrators, in terms of a buy-in to the research process as it was going through prior to publication. I think the downside of competitive tendering and procurement—and of course I do not want to decry the public probity arguments about procurement—is that it creates a greater distance. It creates the researchers as contractors rather than co-producers of evidence that is useful.

Chairman: I will just have to stop you there because I am desperately trying to get as much as I can in and I have only got seven minutes left.

Q1006 Dr Turner: You are outlining something of a cultural problem in departments which clearly has political connotations. It leads in quite nicely to me asking you how do you see the key drivers in departments for seeking the so-called “evidence base” for policy determination? How do you see them? Where is it coming from?

Professor Hope: I think the experiences that I have had, other people have had and the evidence you may have before you, suggest to me, at any rate, that we ought not to perhaps look to Government departments to solve their own problems. I am not particularly sanguine that we can correct some of these difficulties that have arisen. What has happened, if I can put it like this, is a too close coupling of the research production and the knowledge utilisation function, which I think is rightly where experts and civil servants should be retained in-house; how do we use this information, how does it go into policy, and so on? The close coupling of utilisation with knowledge production leads to difficulties. What I would want to suggest is that we decouple these two functions, and that knowledge production is placed at rather more arm’s length from Government departments. Perhaps an independent institute, a public institute, that would be able to take a strategic line from ministers and departments as to what kind of knowledge they would like, but then to manage independently the process of producing relevant knowledge for that process.

Q1007 Dr Harris: A slightly different approach has been suggested, perhaps in your evidence, which is to have a central commissioning pot of money which departments have to bid for and is peer reviewed effectively. They have to compete for the right to do this research on the basis of the benefit that the research will give and effectively the outline design of the project. That would be another way of ensuring that only the best research was done and there was another layer of looking at it at the outset before the protocol was finalised or as the protocol was finalised.

Professor Hope: I think that is part of the same argument. Simply, I suppose that is making government research conform more to standards of scientific knowledge.

Q1008 Dr Harris: If it is an arm’s length commissioning process you do not have to have the work done by an institute, it just needs to be commissioned in a more scientific way.

Professor Hope: That is absolutely right. There is a range of knowledge producers available, both within universities and elsewhere and as there once was within government departments themselves.

Q1009 Dr Harris: What do think of the suggestion, Messrs Glass and Solesbury?

Mr Glass: I am sorry, I take a less pessimistic view than Tim does. I have never worked closely with the Home Office.

Q1010 Dr Harris: What do you think of the suggestion though?

Mr Glass: I think there is something, it is called the ESRC. It seems to me that if you want to do independent research of that kind, then you make proposals that are peer reviewed by the ESRC and that is fine. I think there is also a need for government research, and that Government needs to answer particular questions which it is concerned with. As long as you know that is what the thing is for, then, it seems to me, you can put up safeguards to make sure that it is publicly available, that people get a chance to look at it and so on. I think the last thing we should do, which would be a very bad idea, which would be to give ministers the impression that research is something they need to be afraid of. I think something that says, “We have got to take this out and anaesthetise it and make sure that it is absolutely this, that and the other pure and independent”, would encourage the notion that research is something that the opposition is interested in and not something we ministers should be interested in. I think that would be a very big danger.

Q1011 Dr Turner: Can I ask you how you feel about the role of chief scientific advisers? Not every department has one, notably the Treasury does not have one yet it has been suggested to us that the Treasury is very influential in driving this process. The other problem is of cross-departmental collaboration or the myth of joined-up government. How well do you think the Government handles this?

Mr Solesbury: I will just answer in relation to chief scientific advisers. There are two observations: firstly, I agree with you that not all departments have them. I think the tendency is for the role to be associated fairly exclusively, in practice if not always in principle in terms of a job definition, with natural science and medical science and so on, you will find that organisationally in many departments where there are social scientists, and beyond that there are economists and statisticians and so on, they are not part of that sort of system. I would suggest that the question needs reformulating as to whether in each department you need a person at a very senior level who has lead responsibility for evidence in the broader sense. It is far, far wider than the relatively narrow remit that is attached to people who have the title of chief scientific adviser.

Mr Glass: I would agree with that, and I have worked in a number of departments. I think the notion that the Department for Work and Pensions needs a chief scientific adviser in the traditional sense is nonsense. I have to say, many physical scientists are extremely ignorant about social science methods, very hostile to them, prejudiced against them and believe they do not tell you anything because they are not based on a particular view of scientific method which I think is applicable in some

cases but is not always applicable. Rigour, yes, but a particular view of scientific methods—I think Tim would agree with me here—RCTs as the only way of getting answers, I absolutely agree with him, they are not the only way of getting answers, it is a useful way. Scientists in that tradition would be harmful in many cases.

Chairman: I am anxious to bring in my colleague, Mr Newmark, who has come straight from the Treasury to here.

Q1012 Mr Newmark: Grilling somebody who wants to be on the MPC. My first question is to do with Norman. In 2004 you said: “Systematic evaluation of policies, even where it exists and the Treasury itself as is a notable non-practitioner, remains, in many cases, a procedure for bayoneting the dead”. Can you give me an example of what you mean by that?

Mr Glass: I think it is right that the Treasury is a notable absentee. They introduce all sorts of policies, tax policies, which never get evaluated because they do not have the process.

Q1013 Mr Newmark: Is the Chancellor a v-neck in your view then?

Mr Glass: I never saw him in a v-neck! I think the issue there is in many cases the cycle of scientific evaluation and the political cycle do not match. I know of endless cases where we set up pilots and by the time the pilot was ready the policy was already being rolled out across the country. Unfortunately, the only solution for that is for the social science community and for social scientists within Government to think ahead. We are going to have an issue about probation policy, it is not going to go away. Can we please ensure that by the next time we get to this issue we will have some evidence available that will be relevant. It may not solve the problem tomorrow that we have got, but in two or three years’ time if you plant the acorns the oaks will be there. We have just got to take that long view. It comes back to your point about cross-departmental collaboration. That makes it even more difficult because departments do not—it is amazing—even compare their research programmes with one another to see whether there is overlap and whether they could do things synergistically. Getting people to work together is a problem in all these cases. Everyone signs up to it, but nobody does it for all sorts of reasons.

Q1014 Mr Newmark: William, in your view, is the Government using pilots appropriately? Are there too many or too few?

Mr Solesbury: I think there are probably too few and they are used inappropriately for the reasons that Norman alludes to. It is a good example of the mismatch between the research timetable and cycle and the political cycle, that once pilots are up and running ministers are very often keen to roll them out before results are ready.

Q1015 Mr Newmark: In your view, how can they be protected from political pressure?

Mr Solesbury: In a sense I come back to the point I made before. Maybe it is a false expectation, but if there was a rather more sophisticated attitude amongst senior officials and amongst ministers themselves to evidence and the willingness to see it as a resource to be drawn on as and when, but not necessarily to determine things, then they would perhaps be prepared to say, “In this case the evidence is so crucial to the decision—given, let us say for argument’s sake, the cost and the commitment involved—we will wait until we have the evidence in before we take the decision to extend the programme on the basis of the pilots”.

Mr Glass: I think you have to work with the grain and use the pilots. It is like that old *Two Ronnies*’ question where you are always answering the question that went before, that sort of sketch. I think here too you need to use the pilots to answer next time’s problem, unfortunately not this time’s problem. It is no use appealing to ministers not to be active and introduce policies where they think, “We can do it but it will not have any effect”, but as long as you design them in such a way that they are available for answering questions the next time round, that may be the best you can hope for.

Q1016 Dr Harris: Professor Hope, how is what happened to your research in the Home Office different from some aspects of fraud in the scientific technique to misread despite warnings and misrepresent findings? Do they have things in common, yes or no?

Professor Hope: Yes and no.

Q1017 Dr Harris: Let me help you move on. If peer review publication was required, would that have stopped what happened happening?

Professor Hope: I think it is rather like the effect of law. We know publicly what fraud is, we know roughly what the offence is and we know that if detected we will be tried and, if found guilty, punished. I would agree with you in the sense that if these procedures are akin to what fraud is as a crime, then we need to create some kind of institutional arrangement.

Q1018 Dr Harris: Scientific fraud, publication fraud, that sort of thing?

Professor Hope: Yes. The protection against that for society and the public interest, flawed though it might be, are the procedures that science has evolved itself through publication, peer review and so on. Those are the best we have.

Q1019 Dr Harris: My final question is on this whole evidence-base. I asked Ian Diamond of the ESRC, whether he thought there was a role for the ESRC to monitor whether the Government was doing evidence-based policy-making when it said it was and he said, “Yes, he had the centre to do it”, as you know. Then the chief scientific officer said, “No, that is his job”. David King said, “I do that. I am

24 May 2006 Professor Tim Hope, Mr Norman Glass and Mr William Solesbury

independent. I go around doing this". I argue, but what do you think? Do you think there is a role for a discrete project to check claims of evidence-led policy-making which is really separate and is ESRC led?

Mr Solesbury: That was not the purpose for which the Centre was set up, of which I am a visiting fellow. I would set that aside as the case that he argued. There might be a case for something that might be akin to the National Audit Office, which has a

position of great authority and, usually retrospectively, passes judgments of this kind. I would offer you that as a thought.

Chairman: With that thought, we have come to the end of this session. Professor Tim Hope, Norman Glass and William Solesbury, thank you very, very much for your evidence. I am sorry we cantered through at a pace but such is the nature of the Select Committee. Thank you very much indeed, and thank you to the Committee. Apologies to the v-neck!

Wednesday 7 June 2006

Members present:

Mr Phil Willis, in the Chair

Adam Afriye
Dr Brian Iddon
Margaret Moran

Mr Brooks Newmark
Bob Spink
Dr Desmond Turner

Witness: Sir Nicholas Stern, Head of Government Economic Service, Cabinet Office, gave evidence.

Q1020 Chairman: Good morning everyone and good morning to you, Sir Nicholas. Sir Nick, is that how I address you?

Sir Nicholas Stern: Nick will do.

Q1021 Chairman: Nick will do fine. Thank you very much indeed. Good morning to Sir Nicholas Stern who is the Head of the Government Economic Service. I wonder if I could start by asking you what that means. What is your role?

Sir Nicholas Stern: The Government Economic Service is about a thousand people across government in different departments across thirty departments. What we do—and I have the Head of the Economics in Government Team behind me, Sue Holloway, who organises all this—is that we try to make economists better by helping with the recruitment, organising that part of the story for economists and organising the training and the professional development of economists. We make them better economists so that they are better able to serve government. At the same time I work with fellow permanent secretaries to try to encourage the appreciation of what economics can do. It is a cross-government role.

Q1022 Chairman: It is across the whole of the departments.

Sir Nicholas Stern: Yes, it is.

Q1023 Chairman: You have responsibility for that. Is it analogous to the job of the chief scientific adviser?

Sir Nicholas Stern: No, it is a bit different. I am the head of profession looking after the development of all these people. Dave King advises HM Government across the whole scientific story and he has a big office at the OST. I am actually focussed on looking after the economists across government and encouraging the better use of economics across government. I have direct advisory roles to HM Government on the economics of climate change and of development, but those are separate from my GES responsibilities.

Q1024 Chairman: Why are you not called the Chief Economic Adviser then, or the Chief Economist?

Sir Nicholas Stern: I am called the Head of the Government Economic Service. In the past that has been combined with Chief Economic Adviser; at other times it has not been. At the moment I am just the Head of the Government Economic Service.

Q1025 Chairman: In terms of the economists who work, for instance in the Home Office or in the Department for Education and Skills, do you have a direct supervisory responsibility for them? Do you have a policy responsibility for them? Do they report to you in any way or do you simply manage them in a broader sense. I cannot get a handle on what your relationship is with the departmental economists.

Sir Nicholas Stern: It is more the latter. We have a professional relationship. We meet every couple of months; all the chief economists meet and we discuss policy issues of the day. They might bring some examples to discuss. We discuss how to run the Government Economic Service because we apply the same standard in all departments. From time to time they ask me, as the head of the profession, for advice on particular issues. It is not a direct supervisory relationship but it is quite a close intellectual relationship and we actually meet as a group every couple of months.

Q1026 Chairman: Do you think it would be useful to have the equivalent for science, a government scientific service? We seem to have one sort of set of arrangements for science and another for economics.

Sir Nicholas Stern: Subjects are different and functions are different and I do not see a big pay-off in insisting that different bits operate in exactly parallel ways. I know what works for the economists and I do not assume that exactly that model would work for others.

Q1027 Mr Newmark: I am still not clear on that because it seems to me you effectively have more of an operational role in looking at the various departments within your remit as opposed to being a chief economic adviser. Looking at it purely from the thinking side it is more of an operational role. I am curious as to your answer as to why you do not see any parallel to what could be done with science and technology in the departments and a need to separate the thinking overview in terms of the way people view it as opposed to the operational view which is what you seem to be handling.

Sir Nicholas Stern: It is not quite the operational thing that I am handling, it is the professional thing. What we are trying to do is to build a strong core of economists in government and to build a strong understanding of what economists can do. The latter would be in the senior management of the individual department.

Q1028 Mr Newmark: You are still dealing, I guess, with more the people side, purely the thinking of trying to fill in with people the gaps you may have in thinking. Is that right?

Sir Nicholas Stern: Yes, by getting the right kind of people who are able to use the tools of economic analysis well in building them and supporting them, and getting the senior management of those departments to understand how to use economics, that way we feel we get the strongest influence into good economics across government. I am not an operational quality controller looking at the economic analysis that takes place in each individual part of government. What I do have responsibility for is making sure that there are good economists there to do it.

Q1029 Mr Newmark: Given the emphasis the Chancellor as well as the Prime Minister now seem to be putting on science and technology and the importance there, surely we need to be thinking where those gaps are in science and technology and dealing with it in the same way that you are dealing with it.

Sir Nicholas Stern: That is for Dave King and his colleagues to think through. I know after me you have some chief scientific advisors coming.

Q1030 Chairman: That is the diplomatic answer; we would like to know what you think. Do you think it would be good to have the sort of arrangements that Brooks Newmark alluded to and that I have alluded to in terms of a government scientific service? What is your gut feeling?

Sir Nicholas Stern: I always hesitate to propose new institutions; I always think we have enough institutions and the challenge is to make them work well. You can ask the chief scientific advisors if the current system is working well.

Q1031 Dr Turner: You have illustrated how important it is to have an economic service so that government policy can be based on good economic evidence. When I was a lad I seem to dimly remember an institution called the Scientific Civil Service so we did, in fact, have a scientific service in government. That no longer exists. Are you in a position to give an opinion—that is all I seek from you—as to whether the fact that that is longer there has, in the recent past, weakened the ability of the Government to make sensible use of science and technology evidence in policy making?

Sir Nicholas Stern: That is clearly an interesting question. I have been in government for two and a half years and I do not have that historical sweep. My interactions with the scientists suggest the system works pretty well. I see Dave King a lot; I worked very closely with him on the Commission for Africa. I spent the previous year mostly writing a report to the Commission for Africa. This year the majority of my time is spent on writing a big report for the Prime Minister and the Chancellor on the economics of climate change and I interact with Dave King a lot on that as well. We bump into each other at the Wednesday morning meetings of

permanent secretaries as well. Dave and I get together regularly, every month or so, and we see each other and talk to each other quite a lot outside that. Sir Gordon Conway—who is coming up later this morning—and I have worked together on development over the years when I was Chief Economist of the World Bank when he was head of Rockefeller. We interacted a lot there and our interaction has continued, particularly now on climate change. You have Paul Wiles and Frank Kelly coming up. The Chief Economist David Pyle in the Home Office supports Paul and they work together very closely. In Transport the Chief Economist is Dave Thompson and he works in parallel with Frank Kelly and you get all kinds of integrated analyses of the way in which the mechanical systems work in Transport and the economics of that story alongside it. My own experience is close working personally and with my colleagues as chief economists and their colleagues as chief scientific advisors. My experience of that suggests that the system of collaboration between economists and scientists is working well. That suggests that we have somebody good to collaborate with. Whether there are other ways of doing it in the science side is really not for me, but what I see of it functions well.

Q1032 Mr Newmark: You have mentioned you meet Sir David King, but apart from climate change can you give me a couple of other examples of areas where you met to collaborate and discuss issues? My next question is, how often do you meet with him on a more formal basis rather than informal?

Sir Nicholas Stern: He will have told you—or you will know anyway—about his Foresight analyses. Every year they get a group of serious academics—mostly from outside government, one or two from inside—to think through the big intellectual discoveries in their areas and how it might fit together. That would be an area where we would be together with Dave in thinking across a broad canvass. Most of my personal interactions with him at the moment are on climate change.

Q1033 Mr Newmark: Are there any other specific policy areas that you have been working on together?

Sir Nicholas Stern: Not at the moment. As I say, last year we did a lot of work together on Africa. It depends on the challenge at hand really.

Q1034 Bob Spink: You are Head of Profession for Analysis and Use of Evidence in Government. You are an economist so you are well used to looking at the evidence and making decisions based on the evidence. Are you ever frustrated that policy is sometimes driven by other imperatives than evidence?

Sir Nicholas Stern: I actually think that the way policy works at the moment is a lot more evidence-based than I had the impression from outside before I came in. There are so many examples across government where evidence now is really helping to shape policy. The Welfare to Work programme was

7 June 2006 Sir Nicholas Stern

based on quite detailed micro studies of how people respond to different kinds of incentives as was the Educational Maintenance Allowance; as I mentioned, the analysis of how transport systems work and building a case for road user charges. I think, across government macro and micro, you are seeing it much more strongly. There is a problem of time. You would always like, as an ex-academic, more time to look into the evidence than the pace of decision making life allows you. That can be frustrating sometimes but it is important to be able to offer advice in the timescales that people need it.

Q1035 Bob Spink: You have given us some examples of evidence driven policy which I do not altogether accept. Let me give you some where evidence clearly was not driving the policy. The Government's Sure Start programme, for instance, was not evidence based; there was no evidence as to how that would impact on families or children or communities. The drug classification system is not evidence based; that is something that is undeniable. The decision to go along with the EU directive on magnetic resonance imaging was not evidence based. In fact the evidence would suggest that was a silly thing to do. Do you feel that somehow there needs to be more focus on the evidence base rather than on other political imperatives such as timing and public opinion? How does the Government actually communicate to the public all the various factors that influence policy and the part that evidence actually plays within the eventual policy decision that it makes?

Sir Nicholas Stern: It is difficult for me to comment on the particular cases where I do not know enough about the history to do it. If I take the spirit of your question as to whether I would welcome a still stronger emphasis on evidence base in government policy making, yes I would.

Q1036 Bob Spink: Are you aware of any departments where they do well on taking account of evidence and analysis or any that are weak in that area?

Sir Nicholas Stern: That is a difficult one.

Chairman: Nobody is listening to this; you can be as bold as you like.

Q1037 Bob Spink: It is your responsibility to push analysis and use of evidence across all departments and so you will be aware of strengths and weaknesses across these departments.

Sir Nicholas Stern: Let me give you a picture in this way. If you look at the number of economists in a department that is partly influenced by the proximity of that department's work to the subject of economics. It is also an indicator of how, in the past, those departments have emphasised the economics. The big economics departments are the DTI, the DWP, DFID and the Treasury. They are the biggest; they together would contribute slightly under or close to half of the people in the Government Economic Service. That, for example, is telling you that given the large number of economists in DWP that there is a big emphasis in DWP on the economic approach to evidence.

Q1038 Chairman: So the two largest spending departments of Health and Education have the fewest number of economists.

Sir Nicholas Stern: I think I have the numbers here. I gave you the top ones. DfES has 37 compared, for example, with DWP at 128.

Q1039 Chairman: What about Health?

Sir Nicholas Stern: Forty-two. These are members of the GES. That is 42 for Health and 37 for DfES, so obviously not the smallest.

Q1040 Chairman: Would you not feel with massive spending departments where there has been unprecedented spending in Education and Health you would expect the largest input in terms of economists in those in order to make sure that money was being well spent?

Sir Nicholas Stern: I do think there is significant scope for expanding the use of economists in those two departments.

Q1041 Adam Afriyie: The Government has made a great play about evidence being used in the formation of government policy. Under the Professional Skills for Government programme what specific training and incentives will be on offer to promote the use of evidence in policy making?

Sir Nicholas Stern: In Professional Skills in Government there are a range of subjects in which the people at different levels in the ladder are expected to perform; they are supposed to have experience on these different aspects. Obviously analysis and use of evidence is regarded as a core skill and there are specific aspects of that where people are required to get training. I would be more than happy to send you the training programmes and what is involved in those training programmes if you would like to look at that in detail.

Q1042 Adam Afriyie: Are there incentives involved as well?

Sir Nicholas Stern: As we build up this whole story of Professional Skills in Government these will be core requirements for promotion and advancement. Yes, you have to have those skills.

Q1043 Adam Afriyie: Once this programme is fully up and running, assuming that it works, what improvements are you expecting from the current position to the new position with regards to the evidence being used in government policy making?

Sir Nicholas Stern: Partly it will be the individual skills which people apply themselves that they have learned. They will learn about trials, they will learn about the basics of cost benefit analysis and so on. In some cases they will apply those skills themselves. In other cases they would actually be aware that these skills are there and can be used and they will call them in. I think that awareness part of the story—what cost benefit analysis can do, what serious analysis of trials can do—will increase the demand for evidence whether or not they actually do it directly themselves.

Q1044 Adam Afriyie: In a way this is a wonderful thing and will no doubt make staff feel better, but how will you actually monitor or measure whether or not that training has been affective or that awareness is actually having any output in terms of any changes in the way that government policy is made?

Sir Nicholas Stern: I think what we would like to do over time is understand how those skills are being used; we could do that directly and we could apply the techniques themselves. We could do sampling across the country.

Q1045 Adam Afriyie: Do you have plans to do that sort of thing? Are those plans in place now where you will monitor whether the change in the way you are providing evidence to the Government is actually having an impact?

Sir Nicholas Stern: We will certainly be doing monitoring of the whole story. I could let you have the details of what we will be doing.

Q1046 Adam Afriyie: Do you have detailed plans of how you are going to monitor?

Sir Nicholas Stern: Those are being developed.

Q1047 Adam Afriyie: The definition of science includes natural sciences and social sciences but seems to exclude economics. Why is that?

Sir Nicholas Stern: Economics is a social science, along with all the others. It is a question of labelling academic subjects. Economics is a social science. That does not mean that the kind of grouping used in that kind of definition is actually an operational definition.

Q1048 Chairman: Sir David King, your friend, says not. He actually says that the Government's definition of science does not include economics in its broadest sense.

Sir Nicholas Stern: That is exactly the distinction I was drawing. If you ask somebody from the London School of Economics where I was a professor: Is economics a social science? You will get an unambiguous answer: Yes. If you are talking about administrative structures and whether a particular administrative structure happens to follow the broader scientific definition you will get something different, and that is what we have, something different. It is a social science. That was the question, and economics is a social science.

Q1049 Adam Afriyie: Sir Nicholas, today how effectively do you think the social sciences are coordinated in order to affect government policy making?

Sir Nicholas Stern: I think that interaction is quite good actually. I see a lot of Karen Dannel, the National Statistician, and the Government Statistical Service which, as you know, has some parallels with the Economic Service which is under Karen. Sue Duncan has a reporting line to me; she is Head of Social Research. There is the CRAG group which I think you were told about last time—the Coordination of Research and Analysis Group—

where we meet regularly there as heads of profession. Dave King is there and myself, Sue Duncan and so on, and operations researchers. I think that coordination is quite good. That is at the level of the heads and we try to set a good example, but it is department by department that I think the cooperation works well but in different ways, as I was describing before. My colleagues who are coming after me as chief scientific advisors could describe a department by department coordination which is of course where the hard detail analytical work is carried out.

Q1050 Adam Afriyie: It sounds like you are comfortable that things are going well, but there must be some key weaknesses to the current system. What might they be? Would you identify any weaknesses to the current system?

Sir Nicholas Stern: I think we do have to push harder on using evidence in government and I would welcome, for example, the examples of Health and Education we had before. I would welcome a still stronger presence of economists in those departments. Those would be the areas where I think we could move forward, and Defence also.

Q1051 Chairman: Defence as well?

Sir Nicholas Stern: Yes.

Q1052 Dr Turner: How crucial do you think the Cabinet Office and the Treasury are in their roles in policy coordination in persuading civil servants to actually take note of evidence in policy formulation? Which department or individual do you think is most effective in this role?

Sir Nicholas Stern: I think there are ways of working that help a lot. I think the 10 year Comprehensive Spending Review which is being carried out now will have very strong emphasis on the use of evidence and it is one of those occasions where you actually ratchet up the emphasis on the use of evidence. It is the points where you make big, long run allocation decisions where I think you push quite hard on. I think the Prime Minister's Delivery Unit—which is the Cabinet Office entity that is housed in the Treasury—is another place where the emphasis on the use of evidence starts to bite and gets pushed hard. I think with these kinds of examples—one a unit and one a process—we are collaborating as Treasury and Cabinet Office to press for even stronger focus on the use of evidence.

Q1053 Dr Turner: I interpret that answer as being that the Treasury is actually more or less in the driving seat which is what many of us would suspect. How relevant do you think it is in that context that the Treasury does not have a chief scientific adviser? Do you think that that is right? Do you there is a case for one? What is your view?

Sir Nicholas Stern: Just on your first observation, I think it is genuinely collaborative. The fact that the Prime Minister's Delivery Unit is housed in the Treasury I think is a measure of the collaboration and it is a good example. The Treasury and the Cabinet Office are clearly both cross-cutting

7 June 2006 Sir Nicholas Stern

departments, as they should be. What we do is to draw on the scientific advice of the other departments. Dave King is Chief Scientific Adviser to HM Government and as such we can draw on Dave King's advice. We regularly draw on the advice of the chief scientific advisors in other departments. I think it is quite appropriate that the central partners of government are able to draw on the scientific advisors of other parts of government and they do exactly that. However, it would be a decision for Nick McPherson and the Treasury Board (I am a non-executive member of the Treasury Board) as to whether they want to go forward with that. Again, I think the current structure seems to function quite well because we draw on the assets of government as a whole.

Q1054 Dr Turner: Finally, a lot of people talk a lot about the precautionary principle in policy formulation. A lot of it is nonsense and it gets stretched too far. You have advocated taking a precautionary approach rather than trying to define a discreet principle. How do you approach this in your work and within the Treasury? Is there any guidance? Do you think guidance is even appropriate or whether it is possible to write sensible guidance on the precautionary approach or principle?

Sir Nicholas Stern: I think what you need is good understanding of the economic analysis of risk and how to analyse probabilities with different information. There are probabilities of bad outcomes, good outcomes, what kind of information you would need to estimate and revise those probabilities. At the same time you need to understand consequences of different outcomes in terms of lives saved or lost or whatever they might be, and then the different instruments you can use to approach risk, whether they be instruments which cut back through investment or instruments that deal

with building higher flood defences or insurance instruments of various kinds. It is understanding how you estimate probabilities, understanding consequences of risk and understanding the policy instruments you can use, and that is the analysis that you bring to bear. It is a very rich analysis in economics and I do not think you can reduce it to one particular principle or one particular rule. You can show the kind of economic analysis of risk that is necessary to take an evidence-based analytical approach to those problems. That is why I think it is so important to get the standard of economics in government still higher. I would like to emphasise that over the last five or six years—we can give you the growth rate—the number of economists in government has grown pretty rapidly. It is not as if that message is not getting through; I believe it is getting through. I do not think you can reduce the whole theory and practice and use of evidence in risk to one narrow rule.

Q1055 Chairman: Can I just throw one last question at you? You now have a desk in the Cabinet Office as well as in the Treasury. Do you think Sir David King should have that? Should David King have a seat in the Cabinet Office the same as you have?

Sir Nicholas Stern: I actually do not use the seat in the Cabinet Office; I am actually sitting in the Treasury, although my affiliation is in the Cabinet Office. My affiliation is there because I am embarked on a project which cuts right across government and affects every department but actually the Treasury building is a very good place to run a research team and that is my main activity at the moment.

Q1056 Chairman: It seems a very good place to run everything from, Sir Nicholas. Thank you very, very much indeed for coming to see us this morning.

Sir Nicholas Stern: Thank you very much.

Witnesses: **Professor Sir Gordon Conway KCMG**, Chief Scientific Adviser, Department for International Development, **Professor Paul Wiles**, Chief Scientific Adviser, Home Office and **Professor Frank Kelly**, Chief Scientific Adviser, Department for Transport, gave evidence.

Q1057 Chairman: Could we very much welcome Professor Sir Gordon Conway, Chief Scientific Adviser, at the Department for International Development, Professor Frank Kelly, Chief Scientific Adviser at the Department for Transport and Professor Paul Wiles, Chief Scientific Adviser at the Home Office. I would like to start questions with you, Professor Kelly. How often do you meet your secretary of state or the permanent secretary?

Professor Kelly: I have had an hour and a half's meeting with the secretary of state in the time that he has been in the job so far, the current one. Looking back over the three years that I have been the Department's Chief Scientific Adviser I suppose I have seen the secretary of state in one role or another maybe every three weeks, something like that. I attend each of the board meetings once a month; I spend maybe three or four hours with the permanent secretary and the DGs and I probably meet the permanent secretary once a month outside of that.

Q1058 Chairman: When Norman Glass came before us a couple of weeks ago, what he said to us was the old Civil Service phrase that eggheads and boffins should be on tap and not on top is very much alive and well. What I am trying to get at with all three of you really is how embedded are you actually in the policy making of your departments or are you there simple to give advice when it is called upon?

Professor Kelly: I think that is a very interesting question. I can describe my own experience. I have been Chief Scientific Adviser for three years, 50%. So that is not a long time and you can make your own judgment about how much confidence to put in my experience. My experience was that at the beginning, the first six months or so, it was pretty important for me to be at the meetings in order to establish a relationship with the ministers. After that it was just a lot easier. The private office had got the idea that they should let me know this or that, I could contact them and so it became a lot easier after that first six months.

Q1059 Chairman: You feel you are embedded into that system.

Professor Kelly: There are always issues concerned with information, concerned with who knows what, but I did not feel in any sense excluded, no.

Q1060 Chairman: You feel you are on top and not on tap.

Professor Kelly: I would not put it either way round. It is a sort of working relationship and sometimes it is going to be difficult and you hope to make it easy lots of the time so that when it is difficult people carry on with the relationship.

Q1061 Chairman: Paul, in terms of your secretary of state and permanent secretary?

Professor Wiles: As far as the permanent secretary is concerned, first of all I report direct to the permanent secretary so I see him fairly regularly both with bi-laterals to discuss work that is going on but also in terms of my own performance. I see him quite regularly. I have been in the Home Office now six and a half years so this is the fourth secretary of state that I have worked for in that time and it has varied from secretary of state to secretary of state. I think the important thing for me is not so much how often I see the secretary of state but am I happy that my colleagues in the science and research group in the Home Office are at meetings that the secretary of state is holding where they ought to be there to give advice. Whether it is me there doing it or one of my colleagues is of secondary interest to me as long as I am convinced that the right person is there. The current secretary of state I am sure you will not be surprised to learn I have not had an opportunity to meet at all. He has had some other things to deal with, but I look forward to meeting him for the first time. I did meet Charles Clarke and I was working with him on a number of projects before he unfortunately resigned.

Q1062 Chairman: Gordon, how often do you meet the permanent secretary or the secretary of state?

Professor Sir Gordon Conway: I formally report to the permanent secretary. I see him in one guise or another I suppose once a week. I have a relationship with him and the three director generals in the sense that people go in and out of each other's offices and talk. I reckon I see the secretary of state or the minister, Gareth Thomas, every week in one context or another. I see the secretary of state on a formal basis for a kind of review of what is going on every three months. That is a set, formal kind of meeting with the secretary of state where we go over things. Hardly a week goes by that we are not in a group discussing a particular issue or problem with the ministers.

Q1063 Chairman: One of the points of this inquiry is really looking at the Government's policy of evidence based policy making. It seems to the Committee that fundamental to that is having a chief scientific adviser who is at the heart of policy making, who is the custodian of evidence based policy making and we get the impression that the

chief scientific advisers—certainly the Home Office—are not at the heart of that policy making, actually bringing evidence to bear in terms of policy. Is that a fair comment?

Professor Wiles: No, I do not think it is.

Q1064 Chairman: Do you feel excluded?

Professor Wiles: No, I do not feel excluded. Can I explain my role in the Home Office and how that relates to the different members of the science and research group because I think that would answer your question? I am responsible for all science, both physical and social science, to some extent across the Home Office—I will explain the qualification in a moment—and also for economic analysis, operational research and national statistics. As far as the social science is concerned and the national statistics are concerned those teams are embedded in the four main business areas of the Home Office. They are line managed by the senior policy person in those four business areas but, very importantly, they have a dotted line to me in terms of the quality of the work they do, in terms of their recruitment, training, development, standards, promotion and so on. We have a deliberate matrix relationship where I have a link to all those teams but they are embedded in the policy areas. It was for that reason I answered your initial question the way I did. For example, as you can imagine, the secretary of state recently has been spending some time looking at issues in the National Offender Management Service—as he has in all areas of the Home Office—and what I am concerned with is that my Assistant Director in that area, Dr Chloe Chitty, is at those meetings and she has been at those meetings. Whether I am there as well is a secondary issue, as long as the right person is there who is responsible for the research and statistics in that area.

Q1065 Chairman: With the greatest respect, Paul, there is a difference between being at a meeting and having what you have to say actually listened to and acted upon.

Professor Wiles: I can assure you that what was being said was being listened to and has been acted upon. I was not just saying they were at meetings for the sake of it; I am saying that one of the reasons we embedded those teams into those policy areas was precisely for the reason you are trying to address which is: Are they influencing policy? The answer is, yes, they are working directly alongside policy colleagues as policy gets developed. That is why they are embedded.

Q1066 Chairman: Is that the case with you, Gordon? Do you feel that, because that was not the case within your Department?

Professor Sir Gordon Conway: We have a policy department, a division within DFID that produces papers and I get involved in the production of those papers and then we have a development committee which is the central policy making committee of DFID which meets every few weeks for a two hour meeting. I take part in those at the table and I comment on everything. I do not just comment on

things that are narrowly meant to be scientific because science gets into everything. We had a discussion about corruption recently and I talked about ways in which you can use technology to minimise corruption. It comes out all the time.

Q1067 Chairman: I am grateful for that. I wonder if I could just move on to you, Frank. In terms of your relationship with Sir David King, the Government's Chief Scientific Adviser, do you regard him as your boss or as your advocate?

Professor Kelly: I think one aspect of getting academics in from outside is that they are not very used to having bosses. Maybe I should, but I have not and I hope he does not mind.

Q1068 Chairman: Surely he runs all the chief scientific advisers. Does he tell you what to do?

Professor Kelly: He has been a great help; I have found him a great help over all sorts of aspects of getting assistance here or there or with other departments.

Q1069 Chairman: Do you react to his orders rather than orders from the secretaries of state?

Professor Kelly: I think one of the features government has to get used to if it brings in independent scientists from outside is that we are not used to that sort of question; they do not think like that.

Q1070 Chairman: What about you, Gordon?

Professor Sir Gordon Conway: I see the Chief Scientist probably every week or 10 days. I had dinner with him last night. We meet informally and we meet formally. He does not tell me what to do. He makes suggestions; he makes strong and vigorous suggestions and I may agree with them or not agree with them and that is how we work.

Q1071 Chairman: Is there a tension there between what your secretary of state and the permanent secretary want and what Sir David King wants as Chief Scientific Adviser?

Professor Sir Gordon Conway: There may be tensions over emphasis.

Q1072 Chairman: Do you welcome that tension?

Professor Sir Gordon Conway: Sure. I think government should be about argument and dialogue and tension, and we play a role in that in providing scientific evidence in those debates.

Q1073 Chairman: Sir David is such an advocate for having chief scientific advisers in every department. The question really is, is that part of his empire or is your real responsibility to your secretary of state?

Professor Sir Gordon Conway: I do not even think he thinks of it as an empire. I think that is a word you are using.

Q1074 Chairman: I am just using it provocatively.

Professor Sir Gordon Conway: He is Chair of the Chief Scientific Advisers Committee which we all go to; he is Chair of the Global Science and Innovation

Forum which we tend to all go to. There is a range of other committees and meetings that he chairs which we go to and we have lively dialogues at those meetings. I think that is the way it should be and that is the way it goes.

Q1075 Chairman: Paul, how do you feel?

Professor Wiles: Two things, first of all to repeat what my two colleagues have said as it were but also two other things. Sir David does have regular meetings with my permanent secretary and I think he does with other permanent secretaries as well. He is not directly managing the science in the Home Office; I am accountable through the permanent secretary to the home secretary, but that does not mean to say that he has no routes to exercise some influence both via me and directly himself to the permanent secretary. There are mechanisms for that. The other thing I would add is that Sir David is also the Head of Profession for Science and of course through that route (and you have been to some extent exploring that in relation to economics) he also exercises influence across Whitehall and it is quite right that he should do so.

Q1076 Bob Spink: We have already established that the ethos, structure, culture and working methods of civil services are different from academia and different from the real world, if I can put it non-pejoratively. Do you think it is always right to have the DCSAs as an external appointment, someone from outwith the Civil Service or do you think sometimes the DCSAs might come from within? Frank, you deal with random processes at Cambridge so perhaps you are the right man to start with.

Professor Kelly: I can speak from my experience in Transport but I am not sure how far it generalises. I feel that some of the big wins from having a chief scientific adviser in the department is the challenge function and the opening up of the relationships between science and technology within the department and in the science base as a whole. I think that if you come from outside of government you perhaps find that a little bit easier because you have strong connections with that science base outside government and then you can use your position within government and the very effective and strong support you get from the Civil Service in the role. You can then make that bridge more easily. I think that is where there is a big win from transparency, from peer review, from engaging the broader science base with the scientists and technologists within the departments. For that reason I have found it is certainly helpful in my position in Transport to have come from outside.

Q1077 Chairman: Gordon?

Professor Sir Gordon Conway: Yes, I think that is right. I think it does help having people from outside, particularly senior people from outside. You have three professors sat here; we all spend some part of our time in an institution—I spend a day a week at Imperial College—and it helps. When we speak it carries a bit of weight. I was recently

evaluated on my performance and one of the members of staff said, "He did not turn out to be as intimidating as I thought he might be"; I think I would like to be a bit more intimidating. If you come from an academic institution in this country and you have established a reputation there you carry with it a weight that goes behind the evidence you are trying to get across.

Q1078 Bob Spink: Do you find there is a difference by which civil servants and politicians/ministers actually are proactive or reactive in dealing with you? Do some of them come to you seeking help and advice and involving you early and with other people do you have to go in there ferreting around trying to encourage staff? Do you find there is that difference?

Professor Wiles: Yes, there is that difference. I think probably all three of us have had a common experience here—Frank has already alluded to it earlier on—in that you have to learn how to do that subtly. Where there are situations where there are issues being discussed or decisions being made or plans being implemented where you feel there has not been sufficient notice taken of the scientific advice or there has not been proper scientific advice then we have an obligation to get in there and change that situation.

Q1079 Bob Spink: Do you think that if you were there full time instead of part time . . .

Professor Wiles: I am there full time.

Q1080 Bob Spink: One day a week and 50/50 with Cambridge. So do you feel perhaps, Gordon and Frank, that if you were there full time you could have more influence and develop the relationships and the interchanges more successfully?

Professor Sir Gordon Conway: Four days a week is a kind of odd figure because I travel all the time. I am probably doing seven days a week for the Government and a day for Imperial College. It feels like a full time job. The way in which we influence our colleagues within our departments, a lot of it depends on who we are and how we go about putting evidence across. If you are dealing with people in other disciplines, trying to get them to believe in what you are saying, you have to go at it through your reputation, you have to go at it through your own particular skills of argument and so on and so forth. It is not a question of coming down like a ton of bricks.

Q1081 Bob Spink: Frank, you are 50/50.

Professor Kelly: I think it must depend on the department and the individual. I think, for example, the Ministry of Defence or Defra are departments with strong science establishments, such a dependence on science that you clearly need someone who is 80% or more. In Transport I am not sure you do. It is also the case where many of the academics you would like to get are not going to be willing to stop their academic research streams. I think there is a compromise which needs to be made

here. I think that good support from within the Civil Service, establishing the right sort of support structures, makes it possible to do 50/50.

Q1082 Bob Spink: I am surprised that you feel that Transport is one of the departments that is not so scientific. I would have thought Transport was one of the most scientifically based departments in government.

Professor Kelly: That is certainly an argument I make a lot of the time.

Q1083 Bob Spink: Does your involvement as a DCSA help your academic career? Does that give you status or credibility at Cambridge?

Professor Kelly: I have not perceived it as such but I suspect it probably does. I think to have a foot in the real world—which in Cambridge is defined as everywhere other than Cambridge—is considered to be of benefit.

Q1084 Bob Spink: Do you think the fixed term contracts of three to five years are a good thing or do you think they should be shorter or flexible or longer or what?

Professor Wiles: I think what you are uncovering here is the fact that different chief scientific advisers at the moment are in very different terms and operating in different ways. I actually have a permanent Civil Service contract and I think I am probably the only CSA who has that. The reason for that I think is because I originally joined the Home Office as the Director of Research, Development and Statistics and later became Chief Scientific Adviser. Actually I think there is an interesting question for the future in the Home Office of whether the Home Office would in the future, when the time comes for me to go, wish to appoint a chief scientific adviser in a similar way that other departments have, in other words for a fixed term, maintaining their university positions so they can return to those university positions.

Q1085 Bob Spink: Do you think that in the Home Office your particular contractual structure has been more successful than had you had the same as the other departments?

Professor Wiles: I do not think it has been particularly important one way or the other. I think I would say, however, then when I first joined the Home Office I did actually myself want a structure similar to the ones the other CSAs have, that is maintaining my position at the university and perhaps going one day a week back there. At that time—and things change of course—it was felt that that was not appropriate. Things have changed and most of the other chief scientific advisers now have that arrangement.

Q1086 Bob Spink: Could I ask Frank and Gordon very briefly, do you feel that fixed term contracts are a good thing or do you think they should be longer or shorter?

Professor Sir Gordon Conway: I think in my case it is fine. To some extent I am on trial. I am the first chief scientist that they have had in DFID and I would rather hope that when my contract ends—it is a three year contract—they would want to replace me with somebody of a similar nature to do a similar job.

Professor Kelly: For me personally it is three years 50%. This has been ideal; I could not have done more and maintained my academic position. For the Department I think there are advantages in turning over chief scientific advisers. They come with different skills and will thus spread out the connections between the Department and the science base.

Q1087 Bob Spink: It took you six months to a year to really get to know the set up.

Professor Kelly: Absolutely, and that has to be traded off against this.

Q1088 Bob Spink: Very briefly to all of you, do you feel there is a conflict or tension between your two roles? On the one hand you are the departmental head of profession for scientists and on the other hand holding to account the board of management.

Professor Kelly: In the case of Transport we have separated that. My deputy, Dr Rob Sullivan, is the Head of Profession for Science. Part of the reason for that was that potential difficulty but also because as head of profession he is far better at many of the career advice aspects of being head of profession and his experience allows him to be able easily to answer questions which I would struggle with.

Professor Sir Gordon Conway: I am not head of profession. There are heads of profession in DFID in areas like environment, health and infrastructure and so on. We do not have a head of profession of science. There is at the moment a zero based review going on and the senior management review going on in terms of the structure of DFID and that will be discussed in that review.

Professor Wiles: The Head of Profession for Science in the Home Office is Alan Pratt who is the Director of the Home Office Scientific Development branch. There are also separate heads of profession for economics, social research, operational research and so on. Again the same separation as Frank has just explained.

Q1089 Dr Turner: Gordon, I am sure you remember that before your appointment this committee was quite critical of DFID and its scientific in-house capabilities. Can you tell us something about what you have done since you have moved into the Department to increase in-house expertise so that DFID is able to be a truly intelligent client in using external scientific advice and research?

Professor Sir Gordon Conway: I am very conscious that in some respects I am a kind of child of this Committee.

Q1090 Dr Turner: We are not that responsible.

Professor Sir Gordon Conway: I have been spending the last year and three months or so getting to understand DFID, getting to understand how it

works, how the Civil Service works within DFID, and getting to understand what it does all round the world. I have been travelling extensively. I have been to China, Vietnam, Bangladesh, Malawi, Ethiopia, South Africa and so on. I spend a lot of time with our field officers because that is where a lot of our money is spent. Two billion pounds gets spent out of London in those offices. I have been going round talking about climate change, avian flu, tsunamis, soil erosion, watershed development, et cetera, a whole range of scientific issues in which I am trying to provide help to those particular offices in the problems they are struggling with. I have just been to Malawi, for example. I know this Committee went to Malawi two years ago. Malawi has the dreadful problem of food insecurity. I went with the Chief Economist and the Head of Governance in DFID; the three of us went together to Malawi. We are producing a report on it but basically what we have been doing is to help that office think through what needs to be done in Malawi from the DFID perspective and in terms of the other partner donors; how we work with the Malawi Government to get over this appalling problem of food insecurity. That is the kind of practical, on the ground advice that I provide. More generally I have been providing advice through the Development Committee and again it has been on a whole range of activities. I have been providing advice for the secretary of state and the junior minister on the things that they get involved in. Last week I was before the Environmental Audit Committee with Gareth Thomas, the junior minister, and we talked about the environment work that we are doing. What I have been focussing on in the last two or three months is the white paper. I cannot tell you what is going to be in the white paper; it is going to be, I think, distributed to ministers next week. I should say that I am very pleased with the latest draft; that is about as far as I can say. Last week when we were at the Environmental Audit Committee the minister did make a statement about our interest in the environment and natural resources so that is on record. I can read it or you can get it off the Internet. It is quite a strong statement about a future commitment to work in the area of environment, natural resources and climate change.

Q1091 Chairman: Do you feel you have influenced that?

Professor Sir Gordon Conway: Yes, I have no doubt about it.

Q1092 Chairman: To answer Des's question about capacity, has capacity actually increased?

Professor Sir Gordon Conway: On the environment side—because I think it indicates what would be true elsewhere—the minister said: “I believe that White Paper will demonstrate further the Department's intent in the areas of sustainability which I have mentioned. At the same time, we are also considering what further staffing and organisational challenges we have to address to support the further work that we expect to do as a result of the White Paper. We, as Ministers, have specifically asked the

Permanent Secretary and his management team to look at environmental capacity across the Department. They have set in train two reviews . . . ” and he talks about the two reviews. That is a specific commitment.

Q1093 Dr Turner: We can assume it is possible then that DFID will actually employ more scientists, engineers or suitable experts in-house.

Professor Sir Gordon Conway: This is a commitment to look at that in the context of environment, environment being defined pretty broadly. I cannot make other commitments, except we are in the middle of a zero based review so that all of the staffing will be looked at in that way.

Q1094 Dr Turner: Can I ask your two colleagues how they would measure this in their own departments and whether, for instance, on a crude measure the number of scientists and engineers in your departments is growing or shrinking?

Professor Wiles: I think overall if you are including in the Home Office physical and social scientists across the board they are shrinking, as is the whole Home Office. They are not shrinking disproportionately but they are shrinking. The major shrinkage has been in social research. I have halved the number of social researchers in the Home Office over the last few years. On the other hand, I have increased to some extent the number of economists and operational researchers, that being a deliberate policy to try to rebalance the expertise within the Department in a way I thought was better able to fulfil what the Home Office needed. You started off asking Sir Gordon about your previous criticisms and I am painfully aware you have also been highly critical of the Home Office and science within the Home Office. Indeed, to some extent the reason why I am CSA was in response to some of those criticisms. You were right to be critical. I think there were a number of things first of all to do with the organisation and influence of science in the Home Office, not particularly the number of scientists, the Home Office has always had quite a lot of scientists—good scientists—but you were right to be critical. Home Office officials who have appeared before this Committee in the past have often not been scientists and therefore not surprisingly you were not persuaded of the science. We talked about this in the past; I hope that is at an end. I hope we have now got in place the correct kind of structures and procedures and I am happy to talk about that if you want me to.

Professor Kelly: I have some numbers but I am not sure they tell the whole story. I can think of two major aspects of the employment of scientists and technologists in the Department. One has been the long term transition from a situation where the Transport Research Laboratory was part of the Civil Service whereas it is now a separate body where we have a relationship, so the issue there is how you manage that relationship in order to get the flow of science and technology ideas backwards and forwards across what is a commercial interface. That is one aspect of the transition that has happened in

the Department of Transport over decades. Another is the way in which, when there are particular initiatives—road user charging is one that is a big issue at the moment—the Department is able to second people in, very, very skilled people, who are able to be recruited for particular projects. Every department is different but I think there is an advantage in having the ability to have teams assembled and working on a critical project for a period of time rather than long term career civil servants.

Q1095 Dr Turner: Can I ask each of you to comment on how many dedicated staff you have with the departments who support you in your roles and had you considered setting up an independent advisory council in the way that Defra has? If not, why not?

Professor Wiles: As to the first question, there is an immediate group of a small science secretariat—half a dozen people—who support me directly. Beyond that there is a wider group of people who are doing a range of things from procuring scientific research contracts to data entry and so on. We do have an advisory group; we call it the Home Office Scientific Reference Group. That is the main one and I will come back to that in a minute. We also have separate advisory groups first of all on animal experimentation which of course I am also responsible for. You have already been talking to the chairman of the Drugs Advisory Committee so you know about that. We also have an advisory Committee on the CBRN side and, as you know, Sir David King is chairing an advisory committee on biometrics. So we have a number of advisory committees. The main Home Office advisory committee is similar but in some ways different from Defra's. It is similar in that we made sure that the membership of that committee was not, as it were, chosen by us, but we did it through a slightly different route than the way Defra did it. We asked various learned societies to nominate members to that committee, so we did not choose them, the Royal Society, the Royal Society of Engineering and the Royal Society of Chemistry amongst others nominated those members. It is different in that it is not chaired by an independent chair, it is chaired by the permanent secretary of the Home Office. Is that an advantage or a disadvantage? I think to some extent it is an advantage because it means that the independent external advisory group is talking immediately and directly to the most senior administrator in the Home Office. I personally think that is an advantage, but I understand that you could say that having an independent chair has certain advantages as well.

Professor Sir Gordon Conway: At the moment I have one member of staff and another one joining. The issue of having a senior advisory group is one that I am feeding into this senior management review. I think it would be an advantage.

Professor Kelly: I am supported by the research and technology strategy division which are a dozen. The division has several tasks but they are all in one way or another associated with my role as Chief Scientific Adviser and there is a discussion about whether to

rename it the Chief Scientific Adviser's Unit. There is not a scientific advisory committee for the Department; the Department has several scientific advisory committees but they are in specialist roles (disabled drivers or various other ones). It does not make sense to have a scientific advisory committee for the whole Department because the issues, for example, of atmospheric chemistry, of aviation and climate are very different from the issue of how you communicate with hauliers or the economics of transport modelling. I think that the range of input that we need from the broad scientific community is so large that we would have around the table people who would have difficulty in talking to each other.

Q1096 Dr Iddon: The professional societies have often said to us, either as individuals or in giving evidence to this Committee, that they feel a bit neglected with respect to giving evidence to government departments and they feel they have a lot to contribute. Could each of you comment on that, please?

Professor Wiles: I hope they do not feel that about the Home Office. I certainly see it as part of my job to make sure that they are involved and they do get a chance to comment. We do that in a number of ways. I have already mentioned that we turn to them to provide members for our advisory committees largely, so we certainly involve them in that way. I meet with a number of the learned societies periodically precisely because frankly I need their help and I need their support in two senses. You know, because we have discussed this before, that I have always been keen since I took over as CSA at the Home Office to, as it were, open the windows. What I mean by that is to make sure that whatever the Home Office is doing is open to the kind of informed criticism that might make sure we get things right. Certainly the learned societies are a crucial route to doing that and I have always wanted to engage them. I hope we try to engage them; I hope that we have. Recently, for example, we had a couple of days away with the Royal Society of Chemistry where we talked about the kinds of things that chemistry could be doing to support Home Office work. It was a very successful couple of days. It fed into the EPSRC funding of their work on reducing crime. I very much welcomed it; I think they found it helpful as well.

Professor Sir Gordon Conway: I keep close links with the Royal Society but a range of professional societies provide evidence when we ask for it. The Royal Society of Chemistry is one of those societies that is quite aggressive about being heard for reasons that I do not need to explain. I tend to meet with them rather more than others.

Professor Kelly: I have found the learned professional societies extremely useful, not so much for asking them to provide evidence but using them in the peer review challenge function. For example, the Royal Statistical Society organised a meeting that is referred to in the memo that you had on the statistics of speed cameras/road safety, that area. The Royal Academy of Engineering has recently just had a half day meeting on road pricing and the

technology challenges of that. The IET has been extremely supportive over the Foresight Intelligence Infrastructure Systems project. So active engagement of the members of the societies in meetings, in criticism, in getting into the science that is underpinning the Department's policies, I think that is where a big opportunity lies.

Q1097 Dr Iddon: All state departments put out consultation documents and again professional societies have been very critical about this. They are put out just before the Christmas holidays; they are put out during the summer when people are away on leave. There is a government cabinet guidance document on how consultation should be done, how long people should be given to return their responses and very often the departments do not even stick to the cabinet guidance document. Do you have any role to play in the way that these consultations are handled by your departments?

Professor Wiles: I think that depends on what the consultation is about. Can I broaden the comment you have made because I do not think it is just about consultation. I have heard the same comments from the research communities—with some justification—that it also relates to when we put out invitations to tender for research contracts. There is a problem, I think, in that the rhythm of the political year for the Civil Service and the rhythm of the academic year are different. What is more, there is not a single rhythm of the academic year any longer just to confuse things. I certainly find I have to occasionally intervene and say, "Look, I'm sorry, but seeking to do that consultation or seeking to put out that invitation to tender just at the moment when virtually all our academics colleagues are busy marking final exams might not be a very sensible thing to do and can I suggest we do that at a different time" so I think there is an issue there. I do not think it is deliberate; I think it is literally a lack of understanding of the different timetables of different types of jobs. That is no excuse; we need to get it right.

Chairman: I think you would all agree with that.

Q1098 Margaret Moran: Can I ask about the Guidelines on the Use of Evidence in Policy Making? How useful really are those Guidelines and what evidence has each of you got that they are actually making a difference rather than just having a tick-box approach?

Professor Sir Gordon Conway: I am not sure I can answer that specifically. I can answer more generally in terms of how evidence is used within the Department for International Development. That is a more generic answer than the one I think you are asking for.

Q1099 Margaret Moran: The Government uses scientific advisers to produce these Guidelines and one assumes that as chief scientific advisers within your departments you are working to them. Can you demonstrate how you are working to them and how effective they are?

Professor Wiles: I am assuming you are referring to the Guidelines 2000 and something—because we have upgraded them recently. The Guidelines 2000 and the subsequent iterations of that, what their key focus is really, I suppose, post the Phillips Report, trying to ensure that the scientific work that goes on in government is open to external scrutiny and challenge to try to get it right in the way we have just been talking about. I think that is very important; I will come back to give you specific examples in a minute. However, I see that as something that needs to be placed alongside the actual processes by which policy is developed. We try and push a model in the Home Office which is essentially an attempt to put in process terms the Treasury Green Book on how policy should be developed. I think it is getting the processes right and how evidence is used in the development of policy alongside the Guidelines 2000 that you are referring to, and insisting that there should be some kind of academic challenge. We are going to come on later, I understand, to talk about ID cards. I think that is an example where that has happened. We have, for example for ID cards, recently invited the members of the Foresight Cybertrust and Crime Team to get together again and to spend a day providing a challenge function for ID cards. That was exactly the kind of thing the Guidelines 2000 suggests ought to happen. It was a useful and important day and one of your advisers was there that day. At that day was the then minister responsible for ID cards and the permanent secretary of the Home Office.

Q1100 Chairman: The short answer from Gordon and Frank is that you are not aware of these Guidelines.

Professor Kelly: I am aware of them. They set a context rather like the context that a contract sets in commercial terms. Something is going wrong when you try to read the contract. What should happen is that you can fall back on it but things are going wrong if you have to fall back on it.

Professor Sir Gordon Conway: I think it is important to understand that government departments are very different. The Department for International Development is not like the Home Office or like Defra; it has a quite different role. My understanding of the way in which evidence is used is that in general it conforms with those Guidelines which are the responsibility of the permanent secretary. The way in which in practice we make sure that evidence gets into what we do and help governments in developing countries look at evidence—which in some ways is the most important role we have—is a rather different approach from what other government departments will have.

Q1101 Margaret Moran: Could you give us a concrete example, Professor Wiles, of how your science and innovation strategy is actually improving the Department's handling of scientific evidence?

Professor Wiles: Until comparatively recently the Home Office had quite a large group of scientists but they were known as the Police Scientific

Development Branch. They were very good; they did a lot of very important work to support practical policing, they also did work for the security service and some work for the Department of Transport as well. When I became CSA the problem was that there was no equivalent support for other areas of the Home Office and important though policing is it is one aspect of the Home Office. One of the things that we have been doing over the last eighteen months—you know this because we also renamed the Police Scientific Development Branch as the Home Office Scientific Development Branch—is try to make sure that equivalent scientific support was there for the Immigration and Nationality Directorate and for the National Offender Management Service, to make sure that the right kind of support and advice was there. That is an ongoing project; it is something we are still working on and there are of course significant scientifically based or scientifically dependent projects as you are aware happening outside of the policing area and we need to make sure we get that science right. One of the things that has involved is changing the skills mix within the Home Office science base to make sure it was capable of handling that different area. We have recently recruited a chief biometric adviser; we have recently recruited from MOD a colleague who has expertise in CBRN and so on. We have been changing that skills base within the Home Office Scientific Development Branch in order to support a full range of the Home Office group activities.

Q1102 Margaret Moran: Professor Conway, we are still waiting for your strategy around this. When is it coming and why is taking so long?

Professor Sir Gordon Conway: The reason why we have put it off is to wait for the white paper because the white paper is what we have been working on and it is the commitments that will appear in the white paper which will determine what we write in the strategy. That is the reason for it. We are aiming for the strategy to be out in about November and that will be preceded by a document that I have been producing over the last year which is basically a review of the role of science and technology in development. It is a major review of all the aspects of science and technology as they relate to development: Millennium Development Goals, economic growth, sustainability, the resilience issues, natural resources, governance, science and technology capacity building, intelligent use of science. It is a major piece of work that I have been engaged on for the last year. That will come out with luck in September/October and then the strategy will come out in November.

Q1103 Margaret Moran: A lot of the issues you are addressing require cross-departmental cooperation. How do you deal with that? Do you meet together? Do you peer review each other's agendas and science strategies? How does that work?

Professor Kelly: I have spent a bit of time on the Ministry of Defence review of their alignment and capability and I have found very helpful comments from other chief scientific advisers on things. We are

all very busy so it is hard to set it up in a very formal way, but the phone call or the meeting and the specific question seems to me to be the most effective way to get help from my colleagues.

Professor Sir Gordon Conway: I can give you two examples. The big one is climate change. We work very closely with Defra. I represented the UK delegation at the Commission for Sustainable Development two weeks ago and I was representative of both the DFID and Defra components. It was the same in Ethiopia about a month ago on the Global Climate Observation System where I had both Defra and DFID staff and I was leading that. Another example is the Department for Education and Skills; we have been working with them on the issue of Higher Education in Africa. I suppose we have had some contact with most government departments one way or the other in terms of science.

Q1104 Margaret Moran: In terms of horizon scanning we have heard some evidence that horizon scanning is not well developed within this area. Can each of you very briefly give one example of where you have been using a horizon scanning exercise in policy development and indicate whether that was just a one off or whether that is routine within your department?

Professor Wiles: We have long done and published projections—note projections, not predictions—of prison populations and yes, those projections of future prison population, assuming current trends were to continue, are central to policy making in that area.

Q1105 Chairman: I think we ought to know how you use it.

Professor Wiles: If you look at those projections—as I say they are published, they are on the website so they are available for everyone to look at—what they are indicating is, as I think everybody knows and indeed it is those projections which have often been behind the press reports, that we have a problem with the prison population at the moment. We are heading towards capacity and therefore we need to do things to handle that situation. Those projections have been absolutely essential to those debates about what is the problem and what do we need to do about it. I do not think there can be much doubt about the importance of those in that area of policy making. They are precisely horizon scanning.

Q1106 Margaret Moran: You are giving us one example from one part of the Home Office.

Professor Wiles: Do you want some other examples?

Q1107 Margaret Moran: Could one argue that the immigration policy, for example, has been dealt with in a similar way?

Professor Wiles: I created a year ago a small central intelligence hub within my core economic and operational research group to work partly with Sir David's central horizon scanning team to do horizon scanning. That has been doing that. I think the issue we have—it is common not just within government

but within commercial organisations—is that doing horizon scanning is one thing, getting an organisation to actually lift its head from immediate problems and think 10 or 20 years ahead and use that horizon scanning is sometimes a challenge.

Q1108 Chairman: Are you saying it is not happening?

Professor Wiles: No, I am not saying it is not happening, I am saying it is a challenge. I am saying that it is happening to some extent; it is still not happening in my view sufficiently and it is something I regard as a challenge. I regard it as something that I have to try to get the Department to do. You can imagine, particularly at the moment in the Home Office, it is difficult to get the Department to take its gaze above the immediate crises it has to deal with and say, "Yes, all very well, but in the long run the way to do that is to be able to look further ahead, understand the kinds of risks that lay in the future and think about how you are going to manage them." It is not easy but it is something we have to do.

Professor Kelly: In Transport a major horizon scanning exercise was conducted by the Foresight group, the Intelligent Infrastructure systems project. The Department for Transport was involved with that and we have used, for example, the scenarios for what the future might look like in thirty or fifty years' time. They were radically different scenarios from each other and from what might be the man in the street's expectation of the future. We have used them as a basis for strategy group meetings within the Department and in different units within the Department, most recently rail. Rail has been using scenarios developed from these to look out. They have decisions to make about infrastructure which are long term decisions; they need to think along these timescales.

Professor Sir Gordon Conway: Horizon scanning takes many different forms in DFID again. For example, with individual countries when they are helping them to develop their poverty reduction strategy plans which are the basis for long term funding, effectively that is a horizon scanning for the future of that country. We have just done it for Malawi, for example, and Tanzania. That is a kind of horizon scanning but it does not fall within the narrow definition. I think we are looking within DFID about how we will do more horizon scanning into the future and in particular I want to work more closely with the new chief economic adviser who has only come on board a few months ago. I think we have ideas about how we might together—which would be much more effective—get some more horizon scanning going. That is being looked at within the organisational review that is going on within DFID.

Q1109 Bob Spink: Does DFID accept that with the increased occurrence of extreme weather events and natural disasters it may be that the way in which DFID operates in the future will change? Are you taking account of that in planning how aid will be distributed in years to come?

Professor Sir Gordon Conway: We have a major programme in climate change in which I am heavily involved. We have had meetings and conferences and so on around the world. Quite specifically we are piloting some climate change screening. We are starting a pilot in Bangladesh and that will attempt to look at the impact of climate change on specific aid investments. It is a policy for the EU but we are going to pilot one of these for the EU as a whole and clearly that is going to be very important. Putting it very crudely, if you build a bridge and you have built the bridge according to a one in a hundred year flood you may have to revise that in the future because the one in a hundred year flood may be a one in fifty year flood. That is the kind of question we are going to have to tackle.

Q1110 Margaret Moran: Do you each control your departmental budgets for commissioning research? If not, do you think you should or should there be ring fenced research council funding for that purpose?

Professor Kelly: No, I do not think I should.

Q1111 Chairman: You do not think you should have your own research fund?

Professor Kelly: I have some of my own research fund but do I control the budget, no. The budget is devolved out to the units. There is a part of it which is within my unit but it is not the overall budget.

Q1112 Chairman: I think one of the areas that we are anxious to get a handle on is that it is all right having a government policy about saying we must have policy based on good evidence and scientific evidence should feed into that, and yet there seems to be a situation whereby the chief scientific advisers have been appointed but do not have independent research funds in order to be able to carry out the sort of research that is necessary in order to inform the policy. Do you feel that you should have separate budgets? Do you think the Research Council should have ring-fenced budgets which you can tap into? Or is there some better way of actually being able to underpin the research you need?

Professor Kelly: It is difficult to get good research and I have not myself found that the lack of money is the most severe constraint. For example, in the negotiation with research councils about how to get from the ESRC more money into transport related economic and social research, in that conversation money is not the issue. It is attempting to define the problem so it attracts the very best academics.

Professor Sir Gordon Conway: The main research is funded by the central research department within DFID but there is also research funded by the policy division and of course each of the individual country offices will fund research. I can spend a small pot of money on research if I wish to do so but this has not arisen so far. It might be that that ought to grow in the future but at the moment it has not arisen. We have called down contracts for resource centres in various areas so that if we want something done quickly we can go and get it done. For example on climate change I only have to call the CEOs at the

Natural Environment Research Council and say that we have a certain issue and do they know of anybody who can give advice on it and you get it.

Professor Wiles: No, I do not control the research budgets in the Home Office. There is an interesting tension here that I think there is not a straightforward answer. I think it is actually important that the research that is done in the Home Office is the research that will drive future policy or delivery and as a result of that what we have done in the Home Office is to leave the budgets with those that are responsible for the policy and delivery so that they, as it were, are commissioning the research. Of course you could argue—I think it is implicit in your question—that that is all very well but it means that you, as CSA, cannot directly influence what is being done and that is true. The answer is that I have to get in there and mix it and talk to people about what kind of research I think is needed and why. I am genuinely ambivalent on this one. In some senses like any other scientist I would love to have the whole budget because then I could do exactly what I wanted, but I can actually also see that there would be problems if that were the case and I can see strengths in the way we do it. For example, before any social research is done in the Home Office we have what we call a triple key approach. A senior policy official at director level or above has to say they want the research, why they want it and what they are going to do when they get it. I have to say, as CSA, the research can be done to a quality that will answer the question and then a minister has to say, “Yes, that research should be done”. Unless all three keys are in the lock research in the Home Office does not occur.

Q1113 Margaret Moran: We have heard evidence, particularly on drug policy, that research is not being done at all.

Professor Wiles: That is nonsense; I will talk to you about that later on.

Professor Kelly: I, as Chief Scientific Adviser, and also the Chief Economist/Analyst have a scrutiny function, so that an evidence and research policy framework and the research that is funded by each unit has to go through a process of scrutiny. Quality pressure from the chief analyst and chief scientific adviser is important.

Q1114 Mr Newmark: I want to turn now to risk uncertainty and how that is communicated both internally within departments and externally to the public. How well is scientific uncertainty being handled generally in terms of policy making?

Professor Kelly: Transport has it relatively easy in terms of scientific uncertainty. Many, many of the risk aspects in Transport are those that are well measured and quantified: road deaths, railway deaths. There are large numbers, sadly, in these areas and it is a statistical problem rather than a problem of gross scientific uncertainty. Then there are other areas concerned with the evolution of technology, how rapidly technologies are evolving and what the impact of that will be on mechanisms for road user charging or mechanisms for train

7 June 2006 Professor Sir Gordon Conway KCMG, Professor Paul Wiles and Professor Frank Kelly

signalling, where the issue is how to set up a separation, what is it the Government should do and what is it that should be left to the market, the market being able to evolve rapidly as new technologies are adopted by society. I think Transport has it relatively easy, relative to other departments where there may be gross scientific uncertainties.

Professor Sir Gordon Conway: In the big issues that I have been dealing with—tsunamis, avian flu, climate change—the issues of risk and uncertainty are huge. It is a real challenge to how you communicate the nature of the risk and the uncertainty and you have to be honest but you also have to be forceful. Some of them are extremely difficult. If you take the Sunda Shelf off the coast of Sumatra that is going to go, there is going to be another huge quake and a tsunami any time between tonight and fifty years from now. That is what you say but there is no evidence you can get at the moment to narrow that possibility. You have to try to convey that in the form that says, “Look, you must put in much better measures to actually prevent the damage being greater than it otherwise is going to be.” That is what you tend to do.

Q1115 Mr Newmark: Yes, but I want to focus on the communication of that risk. When that risk is communicated to ministers is that filtered through advisers who have no scientific background or is there direct communication through those who have the science and understanding to the minister who is handling that situation?

Professor Sir Gordon Conway: For example in my case I will produce two or three page briefing notes on tsunamis or climate change or avian flu directly to the secretary of state. He will see them and look at them. In fact I have sat down with him and shown him the scenario for avian flu and tsunamis.

Q1116 Mr Newmark: So in your experience there is no filtered mechanism between you and the minister?

Professor Sir Gordon Conway: No, not at all.

Q1117 Chairman: Sir David King does not filter it, neither does the permanent secretary.

Professor Sir Gordon Conway: No. Obviously in many cases I am talking to the permanent secretary about this but in terms of those big issues I am dealing directly with the secretary of state. It is a tactic, if you like, because I think the most important thing we have to get within our departments is the confidence of the political leaders. We have to get to the point at which they trust us in what we are saying. They know that we are not being extremists on the one hand; they know we are not being too cautious on the other. We are presenting things forcefully and clearly as they are.

Q1118 Mr Newmark: I hear what you are saying, but another way of looking at it is to explain that risk again to the outside world. It comes from you, it goes to the minister and you say there is no filter there. In communicating from government as a whole to the

outside world unfortunately there are things out of your control such as the media and the media may well grasp onto something which in your analysis might be a tiny risk but it may well be blown out of all proportion as a disaster that is imminent.

Professor Sir Gordon Conway: In my particular case the audience I am interested in is governments in developing countries when I travel to a developing country. For example when I was in Malawi recently we had dinner with three ministers and we talked to them about these issues. I have been speaking on climate change in about four or five different countries. I have had half hour interviews on television in those countries and you adopt exactly the same strategy as for the secretary of state. You lay it out honestly, forcefully and with the caveats that need to be there. You have to get people to accept that this is something really serious. On the one hand you are trying to be forceful but equally you must not be economical with the truth.

Professor Wiles: I think the point about understanding more broadly out of the department is a difficult one. I am smiling slightly because Richard Ford from *The Times* is sat over there and he and I once a year sit down and I try to persuade him and his colleagues what is happening to crime in this country. It took me a long time to get the press to both accept and report that crime was actually going down. There was a great deal of scepticism when that first started happening. I am glad to say now that most of the press usually manage to say something like, “Overall crime is going down but . . .” and then go onto something else, but at least we have that broad picture. Richard knows that over five years that has been a kind of struggle. There are some real difficulties there. I am not blaming the journalists or the press; I think there is a problem. There is a problem because, as we know, we do tend to have a rather weak scientific and numeracy culture in this country which does not help. The simple thing that I have struggled to get across so far as crime is concerned is that what we are publishing are national crime rates. However, crime victimisation is heavily skewed in its distribution both socially and geographically and therefore those national risks grossly over-estimate the risks for the majority of people. That seems to me a fairly simple point about distribution. Have I managed to get any of the press yet to report that? No. There is a constant struggle I think to try to get understandings of risk and probability.

Q1119 Mr Newmark: It is the same issue with avian flu.

Professor Wiles: Absolutely.

Q1120 Mr Newmark: Do any of your departments publish all research that is used to underpin policy development?

Professor Wiles: Any social research within the Home Office is published subject to three constraints. The first one is that I say it is of good enough quality to be published. When I say “I say” actually what happens is we have external and independent peer review and on the basis of that peer

review I then take the decision as to whether it should be published. If I decide, as a result of peer review, it is not good enough to be published, if it is external research the authors are then free to seek publication if they can. The other two conditions in which I might constrain publication are first of all if I think it is in the national interest not to. I have done that very rarely but to give you a concrete example we recently had some research done on how the Internet could be used for child pornography. That actually literally explained how you could do it. I did not think it was in the national interest that that should be published. We made it available on restricted circulation to limited police officers and I thought that was the right thing to do. The third thing, occasionally, is commercial confidentiality.

Q1121 Mr Newmark: I can understand the points you are making but generally expert advice that is given to ministers . . .

Professor Wiles: Forgive me, that is a different question. You asked me initially about research and I am saying when we commission or carry out social research in the Home Office then that is published subject to what I have just said. Advice to ministers is quite different. We do not publish the content of our advice to ministers.

Q1122 Chairman: Do you think you should?

Professor Wiles: I think it is sensible to do what we do, which is to publish the underlying research on which that advice has drawn.

Professor Sir Gordon Conway: In principle I think all our research is meant to be available. I would not guarantee it is all out there. We have a new research portal which is being geared up at the moment so that is where that research will be published. I do not agree that advice to ministers as such should be published because I think it changes the nature and the quality of what you write. There has to be within government some areas where you can speak very frankly in a way that if it got out more openly and picked up by the press it would be distorted and misinterpreted.

Professor Kelly: There will always be some tension between the quality of something—whether it is not of high enough quality to publish—and political sensitivities or media sensitivities. I think a large part of what I have been doing with great help from the Civil Service team who work with me is to get routinely the presumption established that our research management database, the web portal to our research, that that is populated, that the material is there. It aids with transparency, peer review and it pushes the quality up for the writers if they know it is going to be accessible.

Q1123 Mr Newmark: Specifically on the advice side, advice to ministers?

Professor Kelly: I do not have anything to add to what Gordon said. I think it is a tricky, difficult issue.

Q1124 Mr Newmark: You feel you could not be as open with some of what you would like to say.

Professor Kelly: I think that a key activity for CSAs ought to be to attempt to separate out those aspects of the issue which can be debated within, say, a learned society. For example, debating regression to the mean in the Royal Statistical Society, it was easy enough because I had very sympathetic ministers to convince them that this was a group who would actually view regression to the mean as hugely sexy and what they wanted to talk about, rather than death on the road. Similarly the Royal Academy of Engineering was very, very keen on the technology of road user charging and were not looking to a newspaper headline. That is part of what the CSA has to help do to separate out those areas that can be put into a useful, transparent, open peer review area, and try to separate off other areas.

Q1125 Margaret Moran: On advice to ministers you specifically referred to a research done on Internet child pornography. Would that advice be shared with other ministers in other relevant departments like DfES?

Professor Wiles: Yes, it was. It was shared with other departments but its publication was restricted to officers and police forces.

Q1126 Adam Afriyie: I am a relatively jolly person. I think that people's happiness should perhaps be the ultimate goal for politicians and their politics. Poor communication of risk can cause an enormous amount of stress and unhappiness for people, especially when it is misperceived or they are worrying about things which may or may not happen. Public consultation is the basis of this question and in particular I would argue that it may well be a cruel trick because it either raises the expectations of people taking part that something good may happen or it alerts them to risks that really have no relevance in their lives in the very long term. In your view what is the primary role of public consultation when it comes to evidence based policy creation? The alternatives might be: is it to shake government policy? Is it to inform the public? Is it to make the government aware of the public concerns?

Professor Wiles: It is an interesting question and in a sense I was half guessing at that when I gave my example of the crime statistics. One of the reasons I gave that example is that I think that if we are not very careful people are left with an incorrect and overestimation of their risks. I think there is a very important balance we have to get right here. On the one hand you do want people to be sufficiently aware of the risks in order to take sensible precautions to manage those risks. I do not want to go around saying that there is no risk whatsoever of being a crime victim. That would be a silly and counter-productive thing to say because people do need to take precautions. What I do try to do—and I think it is important to try to do this—is to try to make sure that people understand that risk as much as possible, understand that it may vary from place to place and from people to people, and more to the point that as part of making that available we also make available the evidence we have on what you can do to mitigate the risk. For example—and I am

glad to see the press have been very helpful on this—we have made very clear over a number of years in the Home Office that there are things that people can do to reduce the risk of household burglary and we have got good evidence on that. Therefore getting that message across that this is the risk and this is what you can do to mitigate and reduce that risk is a very important part of that process.

Q1127 Adam Afriyie: In terms of public consultation what is the aim of it?

Professor Wiles: First of all I think it would be arrogant and stupid for government to think that it knows everything and knows best. I think it is extremely important that we regularly test the assumptions that we are operating on and our perceptions against a wider public understanding and sometimes what happens of course is that you go out there and say, “This is the problem and this is what we propose” and people blow raspberries at you and tell you you have got it wrong. I have done that kind of thing myself, going round local communities, talking about crime rates and local communities saying, “Look, you’ve got it wrong; it’s not what you’re saying it is, it’s something else”. It is very important to have that dialogue because it is one of the checks against the evidence base you are using.

Professor Sir Gordon Conway: I would agree with Paul. What works with consultation is that every answer you get has usually got something new in there in terms of at least a perspective or maybe some new information. That broadens the range of views that we can take into account.

Professor Kelly: I have nothing useful to add to that.

Chairman: We are moving onto just yourself, Paul. You are quite welcome, Gordon and Frank to leave at this point, but we are only going to be here for another five minutes and I am sure you will be fascinated by what Paul has to say and if you want to add a question you can do so.

Q1128 Margaret Moran: I am sure that you are aware that the evidence we have had around the scientific basis for ID cards has been somewhat critical. Can you tell us what your involvement has actually been in the development and implementation of the policy? Why does Sir David King chair the Biometrics Assurance Group rather than you?

Professor Wiles: First of all, what has my own role been and, I suppose more importantly, what has the role of a scientific adviser been in the development of ID cards? You are asking specifically about ID cards; I actually see the problem as slightly broader than that because ID cards is not the only Home Office area where the use of biometrics to manage identity is being used. It is also there in the e-borders programme; it is also there in the biometrically enabled passports. There is a broad range of things. What have I been doing on that? First of all we have an overall Home Office committee which covers the range of those different biometric identity management processes but they are in different parts

of the Home Office. There is a technical sub-committee of that which I chair. There is a technical sub-committee in order to ensure that happens. What I have also done—and I referred to this earlier on—is to recruit and appoint a senior biometric adviser for the Home Office, Dr Marek Rejman-Greene, who is there precisely to ensure that there is scientific advice and we recruited Marek because of his previous experience at BT and particularly his involvement in the development of international standards and so on. I have made sure that additional advice is brought into the Department as these processes began to develop. We have, as you know—I think you were told this by my colleagues when they were before you—a biometric expert advisory group made up of people from within the Home Office and we also have the biometrics advisory group chaired by Sir David, as you have already said. Why does Sir David chair it rather than me chairing it? Because at the time that I felt it was necessary to have such an advisory group it was also clear that, although at the moment the first developments of biometrics identity management are happening in the Home Office, it was likely to spread to other departments in government as well. This is a new technology which I think is probably going to have wider application. It therefore seemed to me it would make more sense to have an advisory committee that was chaired by the Government’s Chief Scientific Adviser so that it could act as a scientific advisory committee in the first instance for the Home Office development but then subsequently for development anywhere else in government. That was the reason why I asked Sir David to chair it and I am delighted so say he agreed.

Q1129 Margaret Moran: You focussed on biometrics but obviously the issue of ID cards within the Home Office is much wider than that.

Professor Wiles: Yes.

Q1130 Margaret Moran: You said earlier, as I understood it, that you had halved the number of social researchers within the Department.

Professor Wiles: Correct.

Q1131 Margaret Moran: How does that impact on the social science in respect of ID cards? Surely it means, from the sound of it, you are neglecting that aspect of scientific policy altogether.

Professor Wiles: No, I do not think I am neglecting it. We still have about 250 social researchers and statisticians in the Home Office. This was not a matter of reducing the numbers to the point where the work that was needed could not be done. It was a matter of balancing the portfolio skills, as it were. For example, when I arrived at the Home Office two things were not happening that are now happening. First of all there was no social research programme on immigration. Five years ago now I put that in place because I felt that was important. There was only one person having any interest in drugs research; we now have a drugs research team, so that was another re-balancing. We had a very, very tiny group of economists and we now have a slightly

larger group of economists. Again I thought that was a necessary thing to do. The reason I referred to biometrics is because I do not have responsibility for ICT in the Department and of course if you are talking about ID cards there are I think two critical areas of dependency: one is the biometric technology and how well that does or does not work and the other is the IT platform on which that biometric technology will sit. I have been focussing on the biometrics side of that problem.

Q1132 Margaret Moran: On the issue of the requirement for the ID card we have had a lot of evidence that there is a severe lack of clarity as to what ID cards are supposed to achieve and the extent that that poses a serious risk to the entire programme and indeed home security risks because of the way the proposals have been put together without any clarity about what they are expected to achieve. Are you satisfied that the scientific advice that is being provided is being taken into account in this whole programme?

Professor Wiles: The brief answer is yes, but let me explain a little bit. First of all, the overall purpose of ID cards is of course a matter for you in Parliament and that was debated and put through the House. The bald purpose is there. The specific requirements for the development are of course precisely going to go out—and they are about to go out now—in terms of the start of the procurement process. We cannot possibly get into a procurement process for ID cards without being clear what we expect those ID cards to be able to do, so there will be specification in there. Have I been involved in that? Yes, I have, and so have my other colleagues. I keep stressing that it is not just me personally who is involved, it is other scientists in the Home Office and we have been involved in that. There are various groups and Sir David's group has also set up some sub-groups to work on particular issues of that to make sure those specifications are clear and will deliver the purposes for which we want ID cards.

Q1133 Margaret Moran: Given that the objective has changed during this debate, if you accept that during the course of the debate the issues relate not just to the Home Office, are other scientific advisers in other parts of government also involved in informing the outcomes on the ID cards?

Professor Wiles: You will forgive me, I am not going to comment on what was an implicit policy question there about the overall goals, but are there other scientific advisers involved? Certainly in terms of the Cabinet Office's responsibility for broad ICT platforms, yes that is happening. The other thing that has been going on—and it is important—is to try to make sure we understand the business cases and the potential business applications of identity management programmes across government. Clearly there is an important issue here about interoperability and whether we can ensure there is interoperability. My experience of that is that the most difficult problem—this is true both inside the Home Office and elsewhere in government—is not so much if you ask people “If you had ID cards, if

you had this method of identify management now, what difference would it make to your business?” People tend to answer that in terms of their current business model. I think the more interesting question is: “Would it enable you to change your business model? Would it enable you to do something in a different way than you are doing it now?” That is where I think we have been working across government trying to get a greater degree of clarity.

Q1134 Dr Iddon: We are doing three case studies. One is ID cards; the second one is the classification of drugs. Is the Home Office happy that the current classification of drugs is working for society?

Professor Wiles: Can I just go back a little bit? Prior to the current legislation in this country we did not classify drugs into different categories, we simply banned drugs. Indeed, I think I am right in that more than half the EU countries still do that.

Q1135 Chairman: That is not the question.

Professor Wiles: I am answering the question, I assure you. We decided we wanted that classification and the question is, is the classification working? In a broad general sense yes, I think it is. I think there is broad agreement on the different risks at one end from the possession of a small amount of cannabis and on the other hand the supply of crack cocaine. I think there is broad agreement that those are clearly at opposite ends of a spectrum of harm and risk. I also think that generally speaking the classification system, since it has been in place, has provided a framework for those in the criminal justice system—the police, the judges or whatever—to implement the legislation. I think broadly it has done that. I think it has also broadly enabled most members of the public to understand the relative risks of these different drugs. I think broadly yes, it has. However, I am well aware—I read your exchanges with my colleagues from the Drugs Advisory Committee—that of course within that classification are some very difficult arguments about the relative rank order and the reason why you have those difficult questions—and Sir Michael, I know, made this point to you—is because we do not have a drugs classification system that has a single criterion running through it. If you had a single criterion then it might be easier to do that. We have a system that asks the Drugs Advisory Committee to take into account a number of different risks and those risks are not necessarily uniform in the way that they are hierarchically organised.

Q1136 Dr Iddon: Sir Michael Rawlins and David Nutt (Chairman of the Technical Committee of the ACMD) told us that drugs are classified in that classification according to the risk to society and the risk to an individual approximately 50/50. I put it to them that psilocin and psilocybin, which are class A drugs, I have never seen them for sale on the street, I have never heard of anybody using them, I have never heard anybody dying from using either psilocin and psilocybin. If the Advisory Committee on the Misuse of Drugs is correct in its definition, why are psilocin and psilocybin in class A?

7 June 2006 Professor Sir Gordon Conway KCMG, Professor Paul Wiles and Professor Frank Kelly

Professor Wiles: I think, as they both discussed with you when they were here before you, once you have a classification system like this there is a problem of historical accretion, as it were, at which point decisions are made. I think the point that I know you questioned them on and it is difficult, is of course that the evidence base is changing. I think what you are really raising is: should it be the case that we go back to zero and re-do at some point in time as the evidence changes? That is not the way the Committee has operated; the Committee has tended to operate as new problems emerge, as significant new evidence emerges. It has never gone back and, as it were, re-done the whole classification from base zero.

Q1137 Dr Iddon: Do you attend meetings with the Advisory Council on the Misuse of Drugs?

Professor Wiles: No, I do not and I should not do so. It is an independent scientific advisory committee.

Q1138 Chairman: In terms of the re-classification, David Nutt and Colin Blakemore have actually produced a complete new classification. Why has that not been adopted?

Professor Wiles: I assume you are referring to the unpublished *Lancet* paper which I have also read and I know you have seen. I think, as Professor Nutt explained to you, that is increasingly the basis on which the technical sub-committee of the advisory committee on drugs is operating and which of course Professor Nutt chairs. We do not have time, which is a shame, because actually there are some interesting issues even within that paper.

Q1139 Chairman: Paul, we would be very interested in actually getting a response to that particular question as to why in fact Professor Nutt's work has not been adopted by the Home Office.

Professor Wiles: Sorry, I think what I said was it is increasingly the basis on which Professor Nutt is operating as the head of the technical group on that committee.

Q1140 Bob Spink: In terms of the classification of magic mushrooms as class A on the one hand and on the other hand crystal methylthioamphetamine as a class B drug when crystal meth is a highly addictive, very dangerous killer drug makes crack cocaine look like a Hershey bar according to the chief of New York police, do you believe that it is time to review fundamentally the structure of the ACMD?

Professor Wiles: Can I first of all comment on the crystal meth point?

Q1141 Chairman: I think we would like you to put that answer to us in writing. I would like to say thank you very much indeed. This is the last oral evidence session for our inquiry and we would be very grateful if you could very briefly give me one thing we should put in our report, just one single thing which would make the biggest difference in terms of the way the Government handles scientific evidence.

Professor Wiles: Make sure that professional skills for government as they develop have clearly within it an insistence on a process and a framework for taking evidence into account.

Professor Sir Gordon Conway: I would buy that. I think that is right. I think it is about processes and about the procedures you adopt, and getting those clearer within departments is important.

Professor Kelly: Anything you could think of that could encourage openness. It is not a blanket thing, there are all sorts of subtleties about it, but openness is what helps get the quality up.

Chairman: Professor Frank Kelly, Professor Gordon Conway and Professor Paul Wiles, thank you very, very much indeed for an interesting session.

Wednesday 5 July 2006

Members present:

Mr Phil Willis, in the Chair

Adam Afriyie
Dr Evan Harris
Dr Brian Iddon

Mr Brooks Newmark
Bob Spink

Witnesses: **Rt Hon Alistair Darling**, a Member of the House, Secretary of State for Trade and Industry, **Professor Sir David King**, Government Chief Scientific Adviser and Head of the Office of Science and Innovation, and **Sir Brian Bender KCB**, Permanent Secretary, Department of Trade and Industry, gave evidence.

Q1284 Chairman: Good afternoon, Secretary of State. Welcome to the Science and Technology Select Committee. Welcome to Sir Brian Bender again; it is nice to have you back with us. Sir David King, welcome again; it is nice to have you back with us. This is the final oral evidence session in a fairly major piece of work we have been doing, in terms of the Government's handling of scientific advice, risk and evidence, and as an attempt to bring together a number of strands right across government, and we are very grateful to all three of you for giving your time today. Can I say, we have one or two members of the Committee who are missing because Wednesday lunchtime they are tied into Statutory Instruments, and other things today and our apologies for that. I am going to start with you, Secretary of State. We had real difficulty in identifying the appropriate minister to bring before the inquiry today, to address this issue of scientific evidence. Do you think there is clarity, in terms of government, as to who actually leads this whole area?

Mr Darling: I think, in some ways, the answer to your question is every single Secretary of State. One of the things which has struck me, after having been in Government for nine years, is that unless a particular policy or approach is wholeheartedly endorsed and pursued by a secretary of state it is actually quite difficult to make it happen. One of the things that has happened in the last few years, which I think is immensely beneficial, is that departments have been far more focused on what scientific evidence they have got available. They have been far more focused on what problems are coming up in the medium and the long term, and climate change is a case in point, where I think even seven or eight years ago people were not nearly as focused as certainly they are now. That means that individual secretaries of state, who, after all, are responsible for and answerable for what goes on in their department, not only deal with the day-to-day stuff that is part and parcel of ministerial life but also they have an opportunity to look ahead and say "What sorts of issues should we be bothered about; what are the risks, what are the opportunities?" I think the answer to your question, in many ways, is that really you need to ask department by department what they are doing. Having said all that, there are clearly issues that cross the entire governmental span, climate change being the classic example, it affects

just about everybody, in relation to the threat of a pandemic, for example, many departments are involved in that. That is best dealt with either by individual departments working together at ministerial and official level or occasionally there will be ad hoc groups of ministers in committees set up to deal with these things. I chair, of course, the cross-government Science Committee; that is very much a sort of very high-level co-ordinating role. If you ask me about outcomes, which is what we are all judged on, that is primarily the responsibility of the Department and I think actually we have made some good progress there.

Q1285 Chairman: Alistair, you have worked in a number of different departments, as Secretary of State now, Chief Secretary in terms of the Treasury, but what we are trying to get at is do you think if there was a Secretary of State for Science, a Cabinet post for science, my question would have been redundant?

Mr Darling: No; and I have to be careful here because, of course, it is always open to the Prime Minister to arrange Government as he, or she, sees fit, and I would not want to condemn something that might happen. There are two answers to this question. One is, I think science and innovation is crucially important. Half of my Department's budget now goes on science and innovation; it is the biggest single element by far. It is very important, and one area that I am particularly interested in is the application of the excellent research and development we do in this country through to commercial exploitation and development in the marketplace; we have done a lot but I think there is more that we can do there. I suppose, almost by definition, I am the Secretary of State for Trade and Industry but predominantly I am the Secretary of State for Science and Innovation, because that is where most of my money goes. I do not think your question would have been redundant at all, because I would have gone on to give you the same answer as I have just given you. A lot of the stuff, for example, that David has been doing over his time in office has been to encourage different departments to use science, to use the evidence available, to deal with the problems we can see coming down the line. I will give you one example. I mentioned climate change, where actually there has been a difference. Through the evidence we have got on climate change, the

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

Government now is spending more on coastal defence. That whole process went from looking at the evidence, the Department, in that case Defra, coming up with a policy, the Treasury accepting, with this evidence, there is an economic benefit to us doing this as well as it is the right thing to do, and then we see it through to where there is actually a budget, and now, of course, it is the delivery to make sure the thing actually happens. I think there are two elements of science. One is, in its own right, it is very, very important and we need to do more to exploit it, we need to be spending more, we are spending more; the second thing is the application of science, to get the scientific evidence right across Whitehall.

Q1286 Chairman: Sir Brian, you were nodding and shaking your head throughout this episode.

Sir Brian Bender: I hope I was nodding my head at everything the Secretary of State was saying and shaking it at some of your questions, Chairman.

Mr Darling: The Permanent Secretary is in complete agreement with whatever I say.

Q1287 Chairman: Sir Brian, ignore that. Do you agree with that analysis?

Sir Brian Bender: I do, because when, for example, I was in Defra, I was accountable to the then Secretary of State, Margaret Beckett, for the way in which the Department used scientific evidence and other evidence in the policy advice given to her. David King, in his role as Chief Scientific Adviser, had the challenge role to ensure it happened, I have also a responsibility to make sure we work across Government, to make sure that the responsible Secretary of State got the right sort of advice. I do not think it would have helped, and arguably it would have hindered, if there had been a different Secretary of State responsible for the science, so I am in complete agreement with what the Secretary of State was saying.

Q1288 Chairman: David, do you concur?

Professor Sir David King: Oh, yes. I have just been sitting nodding.

Q1289 Adam Afriyie: Apart from the Office of Science and Innovation, which other departments have a major role in safeguarding and strengthening the role of the Government's use of scientific advice, risk and evidence in policy-making?

Mr Darling: I think they all do really. I can speak from very recent experience in Transport, for example, where scientific evidence is considered at all levels. There is driving safety, for example. There is the whole question of the challenge of how we deal with congestion, where Frank Kelly, who was my Chief Scientific Adviser, who was appointed, I think, in 2003, who is a Professor of Mathematics at Cambridge University but is also the Department's adviser, having someone like that to look at problems afresh, to bring his own background to bear on the Department's consideration was an immense help and partly it informed our decision actually to pursue road pricing as a solution to the congestion problems we will face in the future. If you

take Defra, for example, obviously I have not been a minister there; that is a very obvious department where science is extremely important in relation to animal disease, in relation to climate change, just about every part of it. I would be hard-pressed to name any department where this was not important, which is why, in reply to the Chairman's question, I made the point that I think it is crucially important that secretaries of state firstly are able to get advice from their scientific adviser direct, because I think I am right in saying, in every case, there is a direct line, it does not have to be filtered through the system, if you like. If we are going to do our job properly, as I say, we do not have to deal with just the day-to-day problems, we have got to look at the problems that we can see coming down the line in 20, 30, even 100 years' time.

Q1290 Adam Afriyie: I guess the Treasury plays a role in policy-making and also the Cabinet Office, but they do not have chief scientific advisers like every other department in Government. Why is that, especially when they have such a cross-cutting role?

Mr Darling: I will make a distinction. I think the Cabinet Office serves a rather distinct function. It certainly brings things together but it is not a department in its own right. The Treasury, you are absolutely right, has an influence on just about every aspect of Government policy.

Q1291 Adam Afriyie: But they do not have chief scientific advisers?

Mr Darling: They also have the benefit of advice coming from departments. Remember that the Treasury has to consider advice in the round. I do know that the Treasury is extremely focused on policies, part of which has been formulated because of advice coming from chief scientific advisers. I mentioned the question of coastal defence but, given the Treasury has to fork out money for most proposals, one way or another, it is focused on the implications of climate change, and the energy review which we will announce shortly is very much part of that. The Treasury and the Cabinet Office perform different functions. I am certainly not against them having a chief scientific adviser. I am not sure it is absolutely necessary, because the function is rather different from a ministry and delivery department.

Professor Sir David King: If I may expand on that a little bit, it seems to me that the Treasury is in a trans-departmental role, in the sense that all of its actions, as has just been said by Alistair really, in terms of Defra, are through other government departments. In that sense, my acting as Chief Scientific Adviser to the Prime Minister and the Cabinet means that the Chancellor will call me in for advice, and certainly we have very close relationships with the Treasury. For example, in terms of spending reviews on each department's R&D application, this comes through my office; equally, the science and innovation strategies, which are determined annually, department by department, we co-ordinate this with the Treasury. I

think, in the sense that I am the trans-departmental Chief Scientific Adviser, I work quite closely with the Treasury.

Q1292 Adam Afriyie: One can argue also that other ministers and departments, equality and women for example, have roles which cut across all government departments, within those departments there is still a chief scientific adviser at the top of a department.
Professor Sir David King: I am suggesting there is something qualitatively different about the Treasury and the Cabinet Office.

Q1293 Chairman: Why are you not based in the Treasury then, David, because that would be the ideal place?

Professor Sir David King: I could be in the Treasury. I could be in the Cabinet Office; in the past the Chief Scientific Adviser has been in the Cabinet Office.

Q1294 Chairman: Do you think he should be, Alistair: the Treasury or Cabinet Office, not your Department; you should have your own separate CSA?

Mr Darling: The fact that David and his team are in the DTI has a synergy, in the sense that we employ a lot of people who deal with science and innovation. In some ways, I think what is more important, certainly as far as the Chief Scientific Adviser is concerned, is the calibre or the quality of the individual who holds that post, and we are very fortunate that we have a first-class, excellent incumbent just now. Where you actually choose to place him is something which I think you can argue for ever and a day. As David has said, it has been in the Cabinet Office, it has been in the Department of Education and Science, when it was called that, it has been in the DTI.

Q1295 Chairman: What is your view, Alistair, of where it should be?

Mr Darling: I do not have firm views as to where it ought to be put. I think it is important that we have such an office, it is important that we have a Chief Scientific Adviser who reports direct to the Prime Minister. David's point there is very, very important. Also, having been a Treasury Minister, the Treasury is different from other departments. There is very little that happens in government the Treasury does not both know about and approve and is not actively involved in; therefore it draws on the resource available to the particular departmental minister, as well as, as David said, having the benefit of his advice too.

Q1296 Adam Afriyie: Then, David, does not that make it an even stronger case for your position, your role, to be located within the Treasury? If it is so cross-cutting, it is seeing everything from every other department, it is making decisions; surely do you not think that Treasury is where you should be? I can understand why the Cabinet Office may not be the first preference; but why are you locked away in the DTI?

Mr Darling: He is hardly locked away.

Sir Brian Bender: He is not locked away. If I may say, again, I am in complete agreement with the Secretary of State. I do not think it matters where David sits so long as he can play a cross-departmental and challenging role. The reason I wanted to come in, Chairman, is you made a comment at the end of your previous question and I just wanted to make sure there was no misunderstanding. The DTI does have a Chief Scientific Adviser and it is not David King, it is now Keith O'Nions, since the reorganisation. David can, and indeed, I can assure you, does, play a challenging role about the quality of evidence and advice going to the Secretary of State for DTI, as he would, and I know does, in relation to Defra and other departments; but it is for Keith, in the first instance, to assure himself, in this relatively new role for him, about that quality of the science evidence.

Q1297 Chairman: Brian, you are absolutely right to pick me up on that, and I agree with you. Could I go on from that to say that, in your opinion, do you think that, the Head of OSI and the Government Chief Scientific Adviser, those roles should be separated?

Sir Brian Bender: I do not have terribly strong views. Again, I am rather with the Secretary of State; as long as it works. OSI has two roles. It has the trans-departmental role of the sort that David carries out so effectively, and it has the role of overseeing allocation and spend of money that goes into science through the Research Councils and, since the recent reorganisation, the innovation pull-through from that. As long as those two roles are carried out effectively, it seems to me there is no organisation that is perfectly right, so, as long as the organisation is not getting in the way of that I would prefer to concentrate on making sure it happens effectively than worry about whether we should play around with the governance too much.

Q1298 Chairman: Is this very much built on David King's excellent performance as Chief Scientific Adviser, so this reorganisation is built on his expertise rather than you feel that is the right structure?

Mr Darling: No. As I said to you, David's office has moved around Whitehall from time to time and there have been different Chief Scientific Advisers. I would be hesitant about building a structure purely around the individual, because otherwise you would find you would spend an awful lot of time reorganising. What I think we are all saying, in our different ways, is the present system works; if it stopped working, for whatever reason, we would have to ask ourselves why it was not working. What I would say to you is what I said right at the start. I think it is terribly important that, of course, process matters but it is actually the outcome, what difference does all this make, in terms of policy-making; that is what we have got to ask ourselves. If that works then if you were drawing up an organogram you might say, "Well, it doesn't look ideal to me," you might do something differently,

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

but if it actually delivers the goods, in terms of outcome, then that is right. Before you say it, I am the first to say that, from time to time, there will be things that go wrong and we need to learn from that; but I think the main thing is to concentrate on what we get out of all this, in policy terms, in delivery terms.

Professor Sir David King: Chairman, would it help to distribute an organogram of the Office?

Q1299 Chairman: It would, for us to have, but I do not want to discuss it just now.

Mr Darling: We can let you have that later.

Chairman: Thank you very much indeed.

Q1300 Adam Afriyie: Alistair, you have worked in many different government departments, as was pointed out earlier. In your experience, which department had the strongest approach to using scientific advice, evidence, risk analysis, in policy-making, and incorporating it?

Mr Darling: It is very kind of you all to refer to my many appointments; actually there have been only four.

Q1301 Adam Afriyie: That is many.

Mr Darling: I can think of one of my colleagues who can move, I think, more often than I do. Let us leave the Treasury aside, for this purpose. You were talking about the Department for Work and Pensions and before that were the DSS and Transport, and DTI.

Q1302 Dr Harris: And Scotland?

Mr Darling: I will go into Scotland if you like, but most of that really was liaison.

Q1303 Chairman: We will leave that one.

Mr Darling: It does very little in its own right, in terms of this area, at all. I have been at the DTI for only six weeks, so of course I am responsible for anything that the Department happens to be doing, but it means that really there are two departments I can talk about which will help you, one is Transport and one the DSS, then the DWP. In the case of the latter, of course, most of the policy that was introduced was a lot of this social policy, for example. I said to Phil earlier on, I have seen a change actually from the late 1990s to where we are now, in that, as a secretary of state now, I would expect to have far more knowledge and far greater awareness of the challenges facing my department, in the longer term, the science, if you like, than certainly was the case eight or nine years ago. In relation to Transport, there was a question of road safety, the whole vexed question of speed cameras, the question of how you dealt with congestion and traffic flows, and so on, and the whole question of climate change, on which, of course, transport has a huge impact. I would not say that one was better than another; what I am conscious of is that the system has been getting better over a number of years.

Q1304 Adam Afriyie: If you could identify any weaknesses, not necessarily during your period of office, but if you could identify any weaknesses in the system, in your experience, of taking and incorporating scientific advice into policy within departments, what would be the weakest part of the process, in your observation?

Mr Darling: I think the key is to make sure that, in the system, you can embed what you discover, what you know, into a decision-making process. It is all very well, for example, take an extreme case, you have got an excellent chief scientific adviser who is completely up to date with all the evidence, and so on, but he is not regarded as an integral part of the department; the key is to get the thing in with the bricks. I can think, in my last Department, Transport, for example, there were some divisions in that Department which were extremely good at looking at all this and taking it into account; others perhaps were more reluctant. I think the key for us in the future, and this actually comes to the heart of what I think you are looking at, is how do we make sure that departments, secretaries of state, therefore the Cabinet, are focused on those things that really we ought to be bothered about and we ought to be doing something about. Part of what David is doing in the Foresight programme, for example, is a good example of where departments are more focused than they were a few years ago.

Q1305 Chairman: Sir Brian, could I ask you the same question. You moved recently to the DTI from Defra; are there different cultures, in terms of scientific advice, in each of those departments, and would you say that one was better than the other?

Sir Brian Bender: My experience is rather as the Secretary of State described it, which is in both departments there is some very good practice and there are some things where you kind of suck through your teeth and think "There are lessons we've got to learn about why it is working very well in this part and not there," and usually it comes down to cultural issues. As the Secretary of State said, I may have the best evidence and analysis available but if my policy people, if I can call them that, do not know what to ask and when, then the best answer the analysts can give is "We'll tell you in three years' time, because if you asked us three years ago we would have done the work on it." A lot of this comes down not simply to the quality of evidence and analysis but the skill of what I will call the policy-maker to relate to the analyst and understand how to ask the right questions and then use that analysis.

Q1306 Chairman: Could you give us a concrete example of what you are talking about?

Sir Brian Bender: Take the energy review as a case in point; there is a lot of analysis going on at the moment and I hope that the Secretary of State will want to be satisfied, before he makes any statement on it, that the policy recommendations are backed up by strong analysis. Indeed, I happen to know that he is getting advice on that.

Q1307 Chairman: Is this a reflection that in 2003 that analysis was not there?

Sir Brian Bender: It is absolutely not a reflection of that. I was talking simply about the present position. If you take MAFF/Defra, David is on record as commenting that some of the analysis at the beginning of the foot and mouth outbreak was a bit inward-looking, and it was not until we shared the epidemiology initially with John Krebs, John shared it with David and then David brought together world-class modellers, that we actually had the modelling process. At that point in time, in my last department, and it is a matter of record, we were too inward-looking in the way we were trying to get the analysis and using it.

Q1308 Chairman: Do you feel that the evidence and the experience from that actually spreads over into other departments; perhaps I should ask you that, David, do you feel that those lessons are learned and then can be adapted elsewhere in government?

Professor Sir David King: Yes; and the best vehicle for that is, first of all, the Chief Scientific Adviser's Committee, which brings together somebody from every government department involved with the Chief Scientific Adviser, either him, or her, or a senior person. We meet frequently and we exchange best practice and we roll out Government Chief Scientific Adviser's Guidelines, the Code of Practice for scientific committees, all of this is rolled out very carefully in government departments. I think we have a process in place, coupled with the science reviews that I have initiated, going into each department in depth to see that they are using science properly, fit to purpose, that it is getting through into the advisory process properly, right up into government decision-making, and also the Science and Innovation Strategies that we seek from each department, so our engagement, from the Office of Science and Innovation, in each government department, in all of those spheres, is quite deep. I agree with what Brian has just been saying about culture. We are pushing hard on this, but old cultural patterns clearly still do exist in parts of government. This is a long process.

Q1309 Chairman: Is there a particular area of government where those cultural patterns you would identify as needing change; is there a particular department?

Professor Sir David King: I think, as we go through government departments with the science review, and unfortunately it is a slow process, we are working on that. What is interesting, of course, and perhaps not surprising, because we take into the science reviews of a given government department not only experts drawn from outside to review the science but also people from other departments so that they can see how we operate, when then we go into their departments we find that they have already prepared themselves by adapting best practice in their own departments. I think it is a good mode of operation but, Phil, as I am sure you know, these

things take a long time, because poor practice sometimes is quite deeply embedded. I am not going to come up with specific examples.

Q1310 Adam Afriyie: The National Audit Office produced a report into Regulatory Impact Assessments. David, do you see a role for chief scientific advisers to be involved in the production of those Regulatory Impact Assessments, especially because a lot of the criticism was based around the fact that it was done on the back of a fag packet, rather than on a consistent basis, and there was some criticism of the DTI in the production of them as well?

Professor Sir David King: I can rephrase your question.

Q1311 Adam Afriyie: You are welcome to, so long as it is the same question.

Professor Sir David King: I am not sure that I have understood; the National Audit Office will go in with their particular set of spectacles to examine a particular piece of work.

Q1312 Adam Afriyie: It is the Regulatory Impact Assessments, where an assessment is made of what a new piece of legislation will affect, and they seem to be particularly unscientific in the implementation. I was asking do you think that the chief scientific advisers have a role in looking at that and ensuring that it is done on a rigorous basis?

Professor Sir David King: Fine; so the chief scientific advisers should be involved wherever policy involves science: the answer is, yes.

Sir Brian Bender: If I may comment, the question is concentrating on science, as if that is a single thing, and I think David agrees with me, I look at these things as a range of different analytical disciplines; it starts with the hard sciences, moves through economics, statistics, social sciences, operational research, and so on. When we are talking about the evidence base for policy, we need to try to ensure that they capture the whole of that evidence base, and, on the whole, the Regulatory Impact Assessments will be an economic assessment, but it needs to have all the analysis in it; so I agree with David's conclusion but I would approach it slightly from the other way round. By the way, the NAO report did criticise one DTI measure but, more generally, it did actually mark us up quite well, among the four departments examined, in our use of RIAs.

Q1313 Mr Newmark: The Government's assertion that it is committed to evidence-based policy implies that evidence is your primary concern when it comes to policy-making. As Secretary of State, is evidence always the main factor you consider in making decisions, and, if not, what are the other considerations that are having an effect on that?

Mr Darling: I remember all this being brought into sharp focus on the question of road safety, where it is perhaps a useful illustration.

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

Q1314 Mr Newmark: You are talking about speed cameras, and so on?

Mr Darling: Yes, absolutely. You want to take into account all the available evidence; but, at the end of the day, a minister's job, Parliament's job, is to reach a judgment as to whether or not a particular policy ought to be pursued or not, and you can look at evidence and that will influence your judgment.

Q1315 Mr Newmark: By that, do you mean financial pressures, do you mean pressures from the public who get irritated by speed cameras; it is only that I do remember, when you were in the House, you said that there is clear evidence, more speed cameras, fewer accidents?

Mr Darling: Let me give an example, which perhaps illustrates what I am trying to say. There is a huge body of evidence that speed cameras save lives and save serious injuries; whatever way you want to do it, that has been established. You remember, there is an issue which has still to come before this House, it was brought by secondary legislation, in relation to whether or not you ought to get three points regardless of whether you were doing 36 miles an hour or 86 miles an hour. I announced, I think in the autumn of 2004, that I thought we should have a graduated system; however, there were many people who said "All the evidence is that these cameras save lives, therefore there's no excuse for having something graduated." I took the view that general fairness and the general public perception of how these cameras operated demanded that we ought to have a graduated approach. That is something the House is going to have to decide on shortly. It is a case where I strongly defend my right, as the Secretary of State, a Member of an elected Government, to form a judgment as to what I think is the right thing to do, and the Commons and the Lords will decide. Let me give you another example, in a completely different area. There is stem-cell research. I could cite, and I would cite, a lot of evidence to suggest that we need to pursue this line of research because it could bring immense gains. It is perfectly open to, and I respect the right of, any Members of the House who might say, because of deeply-held convictions, "No, this is wrong; you ought not to be doing it," to say so. We are entitled, as ministers, as MPs, to reach a judgment, but what you will want to do in each case, I hope, is look at the evidence. If I put it this way, if the entire thing was automatic, I suppose you could argue you did not need any governments at all; now there are some people who might think it is a jolly good idea, but I do not think that actually life works like that.

Q1316 Mr Newmark: I think you gave two interesting examples there. Therefore, in coming to the decisions, or conclusions, that you make, do you think there should be greater transparency? Having said, "While this is the scientific evidence that we've received, we're making a judgment on stem-cell research because there are moral considerations," or, in the case of transportation issues and speed cameras, that "We think that it is reasonable not to penalise somebody driving at 36 miles an hour in the

same way as someone driving at 86 miles an hour," there is transparency to the public in what you are saying, what you are saying is, "Notwithstanding the scientific evidence, this is how we have come to the conclusion"?"

Mr Darling: I think, in general, evidence ought to be published, and if you look at speed camera stuff I can think of at least two major studies that were published and are there. I can tell you, there are 57 different views on what we ought to do with it, because people look at evidence, and of course most people are adept at interpreting evidence in a way that suits their purpose.

Q1317 Mr Newmark: As a policy-maker, in power?

Mr Darling: Of course, because you are entitled to ask me "Why did you reach that decision?" in relation particularly to something like stem-cell, or GM, for example.

Q1318 Chairman: Or nuclear?

Mr Darling: I think the public debate would have been better served if the evidence had been more widely exposed, more widely disseminated, because it is all too easy, in issues like that, just to go to the extremes on either side, if you like, which tend to leave the public baffled rather than throwing any light on these things, which actually are pretty important for our future.

Q1319 Mr Newmark: A question for Sir Brian. You are Head of Profession for policy delivery. Do you agree that evidence-based policy-making is incompatible with the realities of government and the electoral cycle?

Sir Brian Bender: Gosh. Yet again, I find myself in complete agreement with my Secretary of State over this.

Q1320 Mr Newmark: He has not commented on it though, I think. It is just telepathy between the two of you?

Sir Brian Bender: From when he answered the last question. The role of the Civil Service is to provide policy options for ministers, based on the general direction they have set, and those policy options need to be based on evidence and then there need to be, if you like, a risk analysis, pros and cons. Clearly, stakeholder reaction needs to take place, the stakeholder view, the external view of the impact is a fact that ministers will need to weigh out. The role of the Civil Service, if you like, is to speak truth unto power, provide the material for ministers and then ministers make the decisions. I do not actually see an incompatibility.

Q1321 Mr Newmark: Let me give you an example of what somebody said. Norman Glass, who is Chief Executive of the National Centre for Social Research, commented in oral evidence on the fact that "in many cases the cycle of scientific evaluation and the political cycle do not match." He said there were "endless cases where [the Government] set up

pilots and by the time the pilot was ready the policy was already being rolled out across the country.” Is that a fair analysis?

Sir Brian Bender: I recognise his second point but I do not see the link with any electoral cycle.

Q1322 Mr Newmark: There are pressures, as one is coming towards the end of a term, to push ahead with—I can see the master wants to give the answer for you.

Mr Darling: He will be in complete agreement with this point as well. Let me give you an example, because you have asked me from time to time about my ministerial experience. We carried out a pilot as a sort of precursor of what is known now as Jobcentre Plus and we brought together the benefits side and getting people into employment. When I became Secretary of State, the thing was just running, I formed the judgment, based on the evidence I had seen and also coupled with a political conviction it was the right thing to do, that we should go out and roll it out across the country. It is now substantially rolled out and I defy anyone to tell me to go back to the system we used to have in the past. The whole way of dealing with helping people get into work has been transformed. That is an example of where, at the time, there were people who said “The pilot isn’t finished, you haven’t had the evaluation,” and it was not anything to do with electoral politics, because I was never going to do it before that election, or indeed actually the one after that, although it will be all done, I think, by the time of the next one. That is an example surely of where we, as politicians, are elected by people to make a difference, to make things happen; we look at the evidence, but there comes a time when you say, “You use your judgment.” There could be other things where there is evidence that something works, or, for perfectly good policy reasons, we say it is not the thing we want to do.

Q1323 Mr Newmark: That may well be a good example where perhaps it has worked; are there examples where, in your experience, it has not worked?

Sir Brian Bender: I cannot think of specific examples off the top of my head. It does seem to me that, again, it is incumbent on the Civil Service that if we were in the hypothetical situation you described and—

Mr Newmark: No, I am asking not for a hypothetical one, but where someone in Government has gone ahead of what is actually out there as a pilot programme.

Q1324 Dr Harris: NHS Direct?

Sir Brian Bender: I have not been involved myself in an area where the minister has wanted to proceed and I have felt it was unwise to proceed because the evidence did not back it. Indeed, if we were in that position then we would be beginning to get into Accounting Officer territory, because I might have to advise the Secretary of State that the evidence does not exist and therefore I am not convinced it is value for money.

Chairman: David, can you think of any area where policy has moved forward without the evidence base to support it?

Q1325 Bob Spink: What about Sure Start?

Mr Darling: Sure Start has worked.

Professor Sir David King: I cannot come up with a specific example.

Mr Newmark: Unfortunately, I am on two select committees at the same time, so I am now going to have to leave.

Q1326 Dr Harris: I will take over though because I am interested in the distinction between pilots and trials, because I think there is a difference in public understanding between something that is trialled, which I think does not commit you as much, from something that is a pilot. Do you think there is merit, Secretary of State, in making a distinction between trialling something and piloting it, because piloting sounds as if you are going to go ahead but you are just going to fine-tune it, and that may be a reasonable thing to do, but sometimes it does lead to the expectation that it might be pulled if it does not work, and that is never going to happen?

Mr Darling: I understand the distinction, but I am not sure that the public always make that distinction, and I am quite sure that, in the House, for example, that distinction is not made. I agree with you; but it ought to be possible, and I think it is highly desirable, in some areas, that something should be trialled and you ought to be able to walk away from something and say, “Well, it didn’t work.” As you well know, in politics that sometimes can be difficult, because people say, “Ah, you’ve failed and the whole thing’s a disaster,” and so on. Yes, I do understand that distinction, but I suppose it is a nice distinction. I come back to the point which I have been emphasising throughout this hearing, you have got to consider the evidence but, at the end of the day, ministers have to use their judgment; that is what they are there for.

Q1327 Dr Harris: You make the point that there is a political problem and I would make the point to you that everything certainly that I feel that we have been saying through our questions here to Government applies to Opposition parties, and if only one side plays by the rules it does make it unfair, it does not make a level playing-field?

Mr Darling: Even the Liberal Democrats.

Q1328 Dr Harris: Even the Liberal Democrats, and colleagues will know that I hold them to account on these issues where I can. Would you accept that if there were some form, if ever it were possible, of cross-party agreement at the highest level, to prevent the political subversion of genuine attempts to try policies, or to recognise where the evidence is, then that would be of benefit, and would the Government consider initiating cross-party talks in order to protect the scientific integrity, or the evidence-based integrity, of policies?

Mr Darling: Let me give you an example: road pricing. If that is going to develop into a national scheme it has got to be trialled locally, in a large part of the country. For that to happen, really there has to be agreement between the three major political parties that (a) you ought to trial it, (b) let us look at the results and give it a fair wind, and (c) if it works, well, maybe we will collaborate in bringing the thing together. That is asking a lot. I have not been looking at it for the last six weeks in detail, but to the credit of successive Conservative and Liberal Democrat spokesmen they were extremely co-operative, so too were the different political parties that control different councils in England, where we were looking at those areas. There is an example of where the prize, if it succeeds, is immense; if you get it wrong, yes, there will be a lot of egg on face. It is to their credit, on that particular occasion, that, so far, and I underline the words "so far," because I have been in politics long enough to know that these things do not hold indefinitely, we have got co-operation. If that works, that will be absolutely superb, and I am quite sure that approach could be applied in different departments as well. Pensions is another case in point, where, frankly, unless there is long-term agreement between the political parties it is going to be difficult; energy is another.

Q1329 Dr Harris: Indeed, and public health, the MMR vaccination is another example.

Mr Darling: Absolutely.

Q1330 Dr Harris: Secretary of State, when you say something is value for money in Government, one can often refer to the National Audit Office, if they have done an independent evaluation. When Government says something is evidence-based, to what independent organisation at arm's length from Government can you point, to say "and they confirm that our view that this is evidence-based, as far as it can be, is correct"?

Mr Darling: I am not sure that you can, because very soon, rather than late, you will run into people having looked at the evidence, formed a judgment and therefore reached a policy decision; and I think you are asking a lot to get someone, frankly, to audit ministers' judgment. The people who really ought to be doing that are, firstly, the House of Commons and, secondly, the electorate.

Q1331 Dr Harris: Not ministers' judgment. I am sorry, I will be very clear, because I think I was clear, and I hope the record will show this, not the validity of the policy, that is not the question. When the Government says "This is the policy and it's partly informed by evidence, although there are other judgments to be made, and we believe that the evidence supports this policy," that statement, not whether the overall judgment is correct, because there are cost and political and ideological issues as well, that the evidence supports it, that it is evidence-based, could be put out to independent audit, just like statements that "This is value for money,

whether or not we decide to do it for political reasons," one can have the confidence of the National Audit Office?

Mr Darling: Various decisions are reviewed, one way or another. What I question is whether or not it would be wise or what value there would be in setting up a sort of NAO equivalent that reached a view on what particular evidence ministers happened to look at. Ministers can look at a whole body of evidence and decide to accept some and reject others.

Q1332 Dr Harris: Yes; let me suggest what the value is. If you want to have support and not have the evidence questioned, because you want a poor policy-making process to have integrity at least in respect of that which is supposed to be based on science, then it might be of benefit if an independent body said, when the Government says "This is the evidence we've looked at and we think it backs this policy," for someone else, separate from the Government, independent of the Government, to say "We agree that is a fair reading of the evidence they considered and the evidence they considered was a fair judgment of the evidence available at that time." I think that would help you in having confidence?

Mr Darling: I have my doubts. I also have my doubts as to whether or not it is possible to get somebody who was so distant, so impartial. Auditing of things is rather different. Take the energy review, for example. When I make the Government's proposals, I will be able to say, "On the evidence we have looked at, these are our conclusions." I am quite sure there will be others who will look at the same evidence and come to different conclusions from mine, and both of us will be able to point to things, no doubt, in support of our proposition. I just have my doubts about setting up another level of bureaucracy to look at these things again. At the end of the day, if we get it wrong, we are held to account in Parliament, but, ultimately, we are held to account by the electorate.

Q1333 Dr Harris: In clinical practice, this happens all the time, day in, day out, week in, week out, month in, month out; there is an independent, academic assessment of the evidence base for clinical practice. I still do not think you have given me a satisfactory reason why, as far as it can be, that cannot be attempted in policy-making, where the Government says "We have evidence on our side"?

Mr Darling: It is not, essentially, I do not agree with you, and I know that, in clinical practice, you accurately describe the position, I am just not persuaded of the case for setting up the sort of body that you have in mind in relation to Government.

Dr Harris: Can I ask you, Sir Brian, what you are getting out of CRAG?

Q1334 Chairman: Can I say, just briefly, to you, David, should that not be your job, to be making sure that the evidence base on which Alistair makes the proposals to the House of Commons, in terms of

the energy review, stacks up? How you interpret it is different, but at least the facts behind that evidence are there?

Professor Sir David King: I do not think that is quite the question that was being asked, but in terms of the evidence itself, the evidence base, that is certainly my job, and whether it is energy review or preparations for a flu pandemic it is my job to go in and challenge the evidence, see that it is robust before it goes up to ministers. I do carry that function through, but that is not, I think, quite the question that was being asked.

Chairman: No, it was more independent, but I just wondered whether you do that.

Q1335 Dr Harris: Can I ask if you consider yourself independent? If you do, consider yourself independent then it seems to me that the Secretary of State has just decried part of what you have told us earlier is your job, because I think he just argued that he did not see that there was a point in having a mechanism to do that, but that is what you say you do?

Professor Sir David King: I must apologise, because I think I misunderstood your question. If you were saying how is the evidence that is produced to a minister validated then I think the answer is we have an internal challenge process and, yes, I do see myself as an independent Chief Scientific Adviser within Government, for precisely that reason. If your question was does the deduction of the minister, from the evidence, stand up to external survey then, of course, that is not my function.

Q1336 Dr Harris: It was neither of those two; it was asking whether his statement that the policy is evidence-based stands up to scrutiny, and that is a third and different point. My point to you, Sir David, is that if an opposition political party came up with a policy, said it was evidence-based and then had the ESRC or an academic team confirm that it was evidence-based, would you not be concerned, if that had more credibility than one of your ministers saying "We've got this policy, we think it is evidence-based, but no-one independent is going to judge whether it is fair for us to say it was evidence-based"? Would not that concern you?

Professor Sir David King: Can we try perhaps to overcome misunderstandings, and if I could try to make an absolutely clear statement. It is my function to see, when an energy review is conducted, that it is robust, and I will bring in external people to help me in that process. I am not the expert in avian flu, or every other subject, but I am able to judge the quality of the advice being given with the help of those experts, and that is what I do.

Chairman: Can we move on to CRAG then.

Q1337 Dr Harris: What I was asking earlier was what are you achieving through the Coordination of Research and Analysis Group?

Sir Brian Bender: Can I begin perhaps by describing why it was set up in the first place, which was a perception, based on a number of reports that had been done over quite a time, that, first of all, the

different streams of analysis were not being joined up as well as they should be. I referred earlier, for example, to science, economics, statistics, social science, and so on, and too often the analysis has been done in a silo-like way, but then, even more importantly than that, it was not being joined up with the demand for the analysis across departments. It comes back to some of the earlier questions that we were answering on the cultural issue. It was designed to try to bring together both the supply and demand of analysis, and therefore it is a group that has on it the heads of the professions of the various analysts in Government, including David King, Sue Duncan from social science, and so on, and a number of strategy and policy directors from across Whitehall. What it has been doing primarily up to now is more task-based, so we have identified three or four themes from a seminar that we held in 2005, where we thought it was useful, subject areas where we thought it would be good to get joint analysis done because there was a demand for it. Two in particular I can mention. One is migration and the second is globalisation. Having identified those, we have then identified lead departments to take them forward, so the work on globalisation is being led from DTI, Treasury and Foreign Office jointly, and it is bringing various forms of analysis together with what people think the problems may be, and some outside people. The one on migration is being led from the Home Office and the Foreign Office. We do some particular task-based work, and from that we are bringing out some of the benefits of actually what cross-cutting analysis should do, the benefits of that, and improving in a handful of areas cross-cutting work itself.

Q1338 Dr Harris: Do you publish the minutes?

Sir Brian Bender: I do not think we do. I do not have any particular problem; they are not very interesting, as minutes, and certainly I would not have any problem with disclosing them if there was an FOI request on them.

Dr Harris: Thank you.

Q1339 Dr Iddon: This is a quote again from Norman Glass, the Chief Executive of the National Centre for Social Research, who said the old Civil Service phrase that eggheads, or boffins, should be on tap, not on top, was still very much alive in today's Civil Service. Do you think that is the case?

Mr Darling: Who are you asking?

Dr Iddon: Whoever wants to answer.

Q1340 Chairman: Specifically, you, Alistair?

Mr Darling: At the end of the day, the buck stops with the secretary of state, it is the secretary of state's job to make the judgment and to make the decision. What has changed, as I said earlier, is that I think secretaries of state now are far more exposed to the advice of their Chief Scientific Advisers than ever they were in the past, and secretaries of state also are very much more mindful of some of the longer-term issues that they have got to face. I do not think it is a question of trying to set up scientific advisers against ministers, and, as in all policy-making, the process

often is very collaborative and very often you come to the same conclusion. It may be that from time to time David, for example, may feel that the Government should have gone further, or that the tender has gone further than it should have done, based on his advice, but that is the way the system operates.

Professor Sir David King: My feeling is, Brian, that phrase is unacceptable, 'on tap but not on top', for the following reason. It has been my objective, in this post in Government, to take science out of the box, and the way to do this is to demonstrate that science impacts in areas where people did not expect it to impact. The phrase 'on tap' implies that the minister, knows exactly when to turn to the scientist, turn it on and turn it off again, and I disagree with that completely. I think that is why the scientist needs to have a direct reporting line to the secretary of state, that is why the scientist needs to be on the Board, so that during a discussion where the others think that science is not relevant it is for that scientist then to speak up and give the scientific case for it. I can give you many examples where I think people have been quite sure that science was not involved. For example, I was asked once "What about pensions; what has science got to say about pensions?" Here is a thing where demography clearly has an enormous role to play. 'On tap' is the phrase I dislike, it is not the 'on top'. Of course the minister is on top but I do not think the scientist is 'on tap'.

Q1341 Chairman: Can I interject with just one brief question on that. Do you think it is better, therefore, to have a chief scientific adviser who is an external appointment, who is able to challenge thinking, rather than having somebody who is a career civil servant within the department?

Professor Sir David King: All of the chief scientific advisers who have been appointed over the period since we began five and a half years ago have been brought in from outside, for the reason that I think underlies your question.

Sir Brian Bender: Can I add, from my own experience, I would not rule out an internal appointment but there are not only the benefits that you describe but also the benefit of someone who actually is fresh, so to speak, from the research bench. Indeed, having someone like David, or in my last department Howard Dalton, who actually spends a day a week, usually probably a Sunday rather than the Friday that they are allocated, back dealing with live research with students helps keep them fresh. I remember Frank Kelly saying to me that he got a lot of benefit, if the Secretary of State will not mind me saying this, taking his problems back to the Clare College common room and actually discussing them. I think having that external environment as well as the semi-independence it can bring is very valuable.

Q1342 Dr Iddon: Let me challenge you on what you have said then, David. As part of this advice inquiry, if I may call it that, we have chosen three cameo studies: identity cards, the ABC classification of drugs and magnetic resonance imaging. Of those

studies, ID cards, to me, probably was the worst. We have discovered that the scientists have not been as engaged as you, as the Chief Scientific Adviser to the Government, might have expected them to be. Does that surprise you?

Professor Sir David King: Brian, it simply comes back to the point I was making originally. I am talking about where we should be, I think that is where we are moving towards, but of course it is going to continue, my successors will still be playing towards the ideal on this situation. I think you have got some examples where the science advice has not been brought into play, and that is precisely my point.

Q1343 Dr Iddon: That perhaps underlies another of the views that you have given on a previous occasion to this Committee, that the specialist skills of scientists are usually hidden by themselves, because they see it as an impediment to progression within the Civil Service. Do you remember saying that to us, or words to that effect?

Professor Sir David King: What I was talking about there was, you had asked me about the old scientific Civil Service and I felt that the reason why the scientists themselves did not like that was because they felt there was a glass ceiling to promotion into senior positions within the Civil Service. I think that is a very different issue, actually. Sir Brian is an example of a scientist who has risen to the top.

Q1344 Dr Iddon: Do you think scientists have a credibility in the Civil Service equal to that of economists and lawyers and social scientists, or do you think we are not quite there yet, your usual expression?

Professor Sir David King: I think it is a very mixed answer. I think, in some instances, I would be able to point to people, and I think, in a way, I am back to where the Secretary of State was much earlier on in this discussion, it depends on the individual, the individual who shows the quality and the status and the ability to deliver stands above, and that is how status rises for those different professions. I believe we are creating a situation where scientists are now standing proud, in the way you are describing for economists and others.

Sir Brian Bender: Perhaps I can make three points, in response. First of all, I have read, of course, the Report this Committee published in June, which is not a terribly happy story, and I think, in a way, that reinforces one of the points that we were making earlier, that performance is patchy. I could identify, I was just jotting them down while David was answering your earlier question, two or three examples where I think policy has been based on very good scientific evidence. For example, the work done between DTI and Defra in the last few months in Europe on the REACH proposals on chemicals, the work that again DTI and David, in particular, were involved in but led from Defra on GM crops that Margaret Beckett announced in March 2004, plainly the work on climate change. So there are some areas where scientific evidence is really being

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

used very well, asked for in the right way, being used effectively, and other areas where we are not getting it right enough yet.

Q1345 Chairman: Can you give any examples of that?

Sir Brian Bender: You said it yourself in your own Report on the HSE, I cannot remember what it was called, the MRI issue where clearly it was not based on the evidence; you have drawn the conclusion, and I would not for a moment question that, that the evidence was not used properly, or at least effectively, in the negotiation in Brussels. That is the first point. I think the second point I want to make is, as you will know from this inquiry, the Government, Andrew Turnbull, as Head of the Civil Service, and Gus O'Donnell carrying it on since, has been pursuing a programme called Professional Skills for Government, which is intended to ensure that we all actually have the range of experience and skills necessary. I actually got to where I did, to the top of the Civil Service, without any hands-on experience of operational delivery, which probably should not have happened. The civil servants of the future should be getting that experience along the way, and one of the key and core skills, as it is described, for a policy-maker, so not a scientist but a policy-maker, is evidence and use of analysis. So getting this dialogue right between the analyst, in this case a scientist, and the policy-maker is hugely important and there is absolutely no reason why a scientist should not, so to speak, cross the divide and become a senior policy-maker, and there are examples of where that has happened. The reasoning behind your questioning shows that we are still on a journey, we have got a way to go, but I do believe we have got some of the actions in place to try to get the right position at the end.

Q1346 Dr Iddon: We privatised the Laboratory of the Government Chemist some years ago, and we seem to be going along that path for the Forensic Science Service, all very important collections of scientists working closely to Government in the past. Do you think it is deleterious that we are parting with some of our best scientists in this way and creating a huge gulf between those scientists in their new role and the old role that they would have had previously in the Civil Service?

Mr Darling: No, I do not think so. They may be employed by different people and they may be going on to different things, but the decision in relation to whether it is the Forensic Science Service or anything else has to be taken on its merits, whether Government thinks it is the right thing to do or not. I do not follow the argument that in order to get good scientific advice you have got to employ them directly; in fact, a lot of the scientific advice we get, from universities, for example, there is no direct employment, truly funded, substantially. I do not follow your line of argument there.

Q1347 Dr Iddon: Do you agree with that, Sir David?

Professor Sir David King: I think there have been very clear advantages. You mentioned the LGC and I have been around the LGC, I am very impressed with the way they have developed as a privatised organisation. They are taking work from the rest of Europe, other European governments are now sending work to the LGC, so I think it is an example of a very successful privatisation. I think what you are referring to, Brian, is the fact that the LGC potentially would have senior scientists who would bubble up into the Civil Service system and end up as permanent secretaries, and they have been taken out of the system by that mechanism. QinetiQ would be another example of that, a very good example. I think what we need to do, acknowledging the advantages of that process, is to see that we do maintain scientific strength and capacity within government departments, and that is certainly what I am trying to do. It has the advantage that we have now begun to parachute people in from outside, and earlier the Secretary of State said to me that Frank Kelly was like having a breath of fresh air in the Department, it has that advantage, and you might not have got in the past. I think, as long as we address the problems arising from that then we can manage.

Q1348 Dr Iddon: This is for Alistair really. There is a Government Social Research Service, a Government Economic Service, a Government Statistical Service, a Government Operational Research Service, but there is not an equivalent for the natural and physical sciences: why not?

Mr Darling: I do not know, is the short answer to that. That is something I will look at. I do not know, is the straightforward answer to it. If I can add to what David said in the last question, I think actually you raise a broader and more profound question for recruitment into the Civil Service and, dare I say, in this company, if you look at the composition of the House of Commons we are, on any view, very, very light on people with scientific backgrounds, and I think it shows. Not here, I hasten to add.

Chairman: That is a personal slur.

Q1349 Dr Iddon: Sir David, has that question that I have just posed to the Secretary of State hit you in the eye before? We have different government bodies that are supporting social research, economic research, statistical research, operational research, but not scientific research.

Professor Sir David King: I think that what you have, for example, if you take operational researchers, they are a very well-defined group of people, they have a mode of operation that is very well defined. If you move over to where I am operating from, it is a much broader range of activity, we have got the applied mathematicians, the pure mathematicians, on the one hand, we have got physical scientists, life scientists, psychologists, you have got a much broader range of people within that science community. Of course, as Head of Profession, head of the science profession in Government, it is my job to see that there is a proper

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

professional development process in place for those people we are now talking about as scientists, but we have got to live with the fact that it is a much more heterogeneous group of people, and therefore rather more challenging to corral than the other groups that you have mentioned.

Q1350 Bob Spink: Perhaps you could argue, conversely, and it is how you interpret the evidence, that would be a reason for having a specific body, rather than a reason for not having one, Sir David. Sir David, when will you be publishing the revised Code of Practice for the Scientific Advisory Committees?

Professor Sir David King: We are looking at it carefully at the moment and I do not think we will be ready to publish until 2007.

Q1351 Bob Spink: Can you take us through where the major changes will be?

Professor Sir David King: No.

Q1352 Bob Spink: Will you have a strategy for securing compliance with this new Code; what will that be?

Professor Sir David King: I have currently a strategy in place and that strategy is the Chief Scientific Adviser's Committee, which operates down through the departments, and then the science reviews, the Science and Innovation Strategy, so the Chief Scientific Adviser's Guidelines, which have been updated more recently, and the Code of Practice are absolutely key to the implementation of what we are trying to do.

Q1353 Bob Spink: How do you make sure, Sir David, that the independent advisory committees remain independent?

Professor Sir David King: The Code of Practice currently in place assures that, through the mechanism by which the membership is drawn together.

Q1354 Bob Spink: What role does the CSA have to play in that process?

Professor Sir David King: The chief scientific adviser in the government department has to see that the Code is followed in pulling together the committees, so I would not say just the chief scientific advisers, it is the civil servants in that department as well.

Sir Brian Bender: If I can add, I cannot remember what committees it related to, but in my last appointment I did ask Howard Dalton to reassure himself and me that one or two committees were meeting satisfactory criteria, because some doubts had been raised, either in the press or somewhere else, so I did see it as a role of the departmental Chief Scientific Adviser to provide that assurance.

Q1355 Bob Spink: Do you see the CSAs having a role in monitoring the balance of the advisory committees, that is, for instance, between lay members and experts?

Professor Sir David King: Yes. That is part of the Code of Conduct.

Q1356 Bob Spink: Looking at this question of lay versus expert, there have been some questions raised on that. If I could just quote you the Royal Society, they said there was cause for concern about a low level of scientific representation on Defra's committee for radioactive waste management, and Professor Grimston said, quite eloquently actually: "Increasingly committees examining complex scientific issues are being populated by lay members," and here is the eloquence bit, he said: "elevating public opinion over professional expertise and subordinating science to prejudice." What comment would you make about that, and do you agree?

Professor Sir David King: That would not be following the Code, if that were the result.

Q1357 Bob Spink: Would that be the case in, for instance, the radioactive waste management committee, or the ACMD, or any of the other committees; can you think of any committees where that would be the case?

Sir Brian Bender: My recollection is that it was indeed around that time, that, now you have raised it, it was one of the committees I asked Howard to look at. The Royal Society were saying this, and he engaged in some discussion with the Royal Society, with the Chair, and certainly did provide some advice to ministers at the time.

Q1358 Dr Harris: Would you consider, from your previous role at Defra, the Veterinary Products Committee to be an independent scientific advisory committee?

Sir Brian Bender: I am afraid I would need notice. I cannot remember its exact role and responsibility, but I would assume it is listed somewhere in the Defra website as either fitting that description or not.

Q1359 Dr Harris: I was not trying to catch you out. The point is that in the *Daily Mail* just recently it said: "Fears about eating beef from cattle pumped up with growth hormones have been raised by a government expert." I thought "What's Sir David been talking about now?" It turns out that the man concerned, John Verrall, is the consumer representative on the Veterinary Products Committee and yet a number of newspapers have called him a 'scientist' because he has a scientific degree, or a 'government expert'. I am just asking do you see that as a problem?

Sir Brian Bender: Obviously, I do not know the detail of this particular committee, but any advisory committee will have a range of views. Indeed, I remember, when I was in Defra, some of the issues around the Spongiform Advisory Committee, its range of expertise, including the lay expertise, and indeed the way in which it reached views and then some members spoke outside the Committee, despite the views reached. These things usually come down to the membership, and then essentially the control the chair has in trying to ensure robust discussion but then discipline when decisions are reached.

Q1360 Bob Spink: Do you think there should be an upper limit on the term of office of the chairmen of these committees?

Sir Brian Bender: I had assumed they were kind of 'Nolan'ed', that is to say, whatever the Nolan Committee said initially, these are usually public appointments and therefore normally two terms is the upper limit. Certainly my experience is, if we wanted to reappoint beyond that, I or the Minister would write to the Commissioner for Public Appointments, giving a rationale, and she would say either "Okay, in this case I agree," but if we simply went ahead and prolonged then we would get into trouble.

Q1361 Chairman: Do you think the chairmen of some of these committees have too much power and influence? ACMD is an example where the Chairman seems to have considerable influence over what that Committee does.

Professor Sir David King: I think we are back to personalities, therefore it is difficult to comment, but certainly practice in the way chairmen operate is very different from one committee to another. I think it does raise a question though, and not only about the chairman but about the rest of the committee.

Q1362 Chairman: Can I move on to the issue of research, and perhaps, Alistair, I can begin with you here. What processes should departments use, in terms of determining what research they need and from where they should commission it?

Mr Darling: Again, I do not think there is a hard and fast rule, department by department, but I think that ministers have to decide what are the areas they want to look at, what are the areas they need to look at, and that will be a mix perhaps of policies they have decided to pursue, it may be as a result of the processes we discussed earlier, in relation to long-term problems coming up, do we need to do more research to sort these things out. The Government is responsible for commissioning a very large part of research in this country and ministers, at the end of the day, have to bring to bear their judgment as to what research they commission. In my experience, ministers tend to be less involved in who they commission it from, in that a lot of ministers, frankly, would need advice as to where is the best place to go, is it a university, is it a particular research body, is it an individual you ask to come and advise on it.

Q1363 Chairman: There have been accusations, which have been made to the Committee, particularly in written evidence, that government departments have been selective about which research they have commissioned and, in fact, have been selective about which elements of the reported research they actually use. Do you feel that if, in fact, research was commissioned which was always arm's length, all of which was published as a matter or course, we would be far better, in terms of getting objectivity around that research?

Mr Darling: Most research is published and sometimes it can be very irritating for the government of the day. I understand also it can be very irritating if you have done a piece of research and the minister says, "Well, that's very interesting but I'm not going to do it," or "I don't agree with you," or "I agree with half of it and not the other half," and certainly I have come across many people who have felt that, and incidentally have become top expert when they are reported in the newspaper complaining about it, even though you may never have set eyes on them. Again, there must come a point where ministers are entitled to reach a view as to what research they think they need to commission, how much they are willing to spend on research; in relation to where they get it, I am not aware. I have never come across anybody saying, "Well I want you to go to them because they're going to give you a particular answer," but you will take advice in relation to who is it that happens to be good in this area, who is it that has got some expertise. I think that is pretty arm's length; although, inevitably, if somebody is working closely with a department, someone else, who maybe did not get the contract, will cry "Foul."

Q1364 Chairman: Nowhere in your experience has any government minister commissioned research deliberately to get an answer which would back up his policy direction?

Mr Darling: I am not in a position to comment on every single piece of research that was commissioned by any government minister in the last 50 years, or whatever. I can say, in my experience as a minister, I am not aware, well I in particular, I know I have not ever said "I want to go to X because X will tell me what I want to know." In fact, I can think of more cases where I go to X and he comes back and tells me either what I did not want to know or what was not particularly helpful.

Chairman: David, you must have examples.

Q1365 Bob Spink: Nancy Cartwright, of the LSE, did raise concerns about the Government's increasing use of consultancies to do research and to do analysis of research, rather than going to the learned societies; does that cause you any concern? From not just an expenditure viewpoint but from a manipulation of what you want to hear viewpoint, does that give concern?

Mr Darling: I think, in relation to consultants, there are two issues. One is, I think right across government there is a general feeling that we should be using less consultancy rather than more, and certainly that is my view and I think you should be sparing when you go outside. That said, which is the second point, the size of government, and certainly Whitehall, in many places has been reduced, and the DTI has got over 1,000 fewer people than it had, what, two years ago. Inevitably, that means the Department will be doing less, and it does not make any sense, in some cases, to carry on expertise which you may need only every five or 10 years, therefore you have to go out and get it. Whether or not you go to a firm of consultants to give you advice or whether

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

you go to a university or a learned society, really, I suspect, depends on the particular instance of that. I do not know this lady nor do I know what specifically she had in mind, and if you would care to let me know then certainly I can cause inquiries to be made.

Q1366 Bob Spink: She gave evidence to this Committee and it will be published, so you will be able to see it.

Mr Darling: I will see it then.

Q1367 Dr Iddon: Since the learned societies have been mentioned, if I could turn to you, Sir David. We have heard a lot of praise during this inquiry about your guidelines for the learned societies but, in discussing matters with the departmental CSAs, they gave us the distinct impression that they made little use of them and, indeed, Frank Kelly went a little further, and I have to say immediately that Frank Kelly, in our view, is quite well respected as a CSA, but he has given us the impression that the guidelines should act like a contact, you look at it only if things have gone wrong. Are you a bit surprised by this evidence that we are picking up?

Professor Sir David King: Yes, I am.

Q1368 Chairman: You were not conscious of it, to be fair.

Professor Sir David King: I think, if I may, first of all, answer the original question then come to this, because I just want to take a slightly different angle on this question of what research is needed for departments and what is sought. I think it is very important that departments procure research from an intelligent customer base. In other words, the department itself needs to have in house people who understand where the best research can be procured, if it is not actually being conducted in house. Of course, if you go to Defra, Sir Brian would know, but I think Defra has about 800 scientists in house, so it is quite a large team, they would have a large number of people whom you can turn to and say "Can you do it, or would you like to advise us on who are the best people to procure that research from?" It is very important to make this distinction between research that is conducted in house and then the use of the in-house team as intelligent customers. On the question of the increasing use of consultants over learned societies: we approach learned societies on a frequent basis, not for a piece of research to be done but for advice on who the best people are to approach; in other words, learned societies do not take on, as far as I know, pieces of research. We might go to the Royal Society to do a job of work, such as the nanotechnology work where we wanted them, but that is not what we are discussing here. Pieces of research would be done by key individuals, and we will certainly use the learned societies to find out where the best individuals are, and if Rob Sullivan is sitting behind me he will know, in the Department for Transport, that the Department, I believe, does follow that route, as an

intelligent customer, going out to learned societies and checking where the best available research would be.

Q1369 Dr Iddon: The Government supports, of course, the research councils in a pretty major way and they in turn support the universities but they have their own research institutes as well. Do you think there should be a ring-fenced fund within the research councils, perhaps administered by RCUK (Research Councils UK), which could be used to commission research which would underpin policy-making in the various government departments?

Professor Sir David King: If I give you, off the top of my head, my response to that, I do not think a ring-fenced budget is a very good idea. I think that already we have very good examples of understandings between research councils and government departments and, staying with Defra, the arrangements between Defra and BBSRC are very close and the flexibility I think is extremely advantageous over having a ring-fenced budget. It recognises that some of the research will be directly of interest to Defra, and Defra only, and some of the research will be for blue-skies purposes but also feeding into Defra's needs over a longer period of time. I think the current arrangement, in my view, generally is working well.

Sir Brian Bender: Can I maybe supplement it from my own experience. One of the things we have done in this group CRAG was bring in Ian Diamond of the ESRC, very much so that he could, in his hat, participate in a discussion of future analytical needs, so that he could then think whether there was value for him in his research council aligning some of its programme on what we were saying might be the future analytical needs of Government. That is another way in which we can skin this cat, so to speak.

Professor Sir David King: If I may add, Ian is also Chairman of the RCUK, so he brings the research councils in general to the table.

Q1370 Chairman: Can I ask you for a yes or no: do you feel there is enough money within departments to be able to commission research when they need it, generally speaking?

Professor Sir David King: Yes.

Mr Darling: Yes, I would say that unequivocally, but, as in every other area, departments have to make choices and that does not do any harm sometimes.

Q1371 Chairman: The question really is they are not commissioning research because they do not have the resources to do it?

Mr Darling: Again, I have not come across that.

Q1372 Dr Iddon: Has it changed, for example, in Defra, David, because at the time of the foot and mouth crisis there were a lot of outside complaints, that they did not think Defra had invested enough in research and did not have the money to invest in it, at that time. Has the money come back now?

Sir Brian Bender: The issue in Defra primarily at the time, or MAFF, as it was, was a cultural issue. There was a separate question, which I think the forerunner of this Committee, maybe it was the Lords equivalent Committee, looked at, and criticised, and indeed I think it was my first meeting with David when he was appointed as Chief Scientific Adviser, that when the Department was under resource pressure it did cut its research budget. That was corrected, so that subsequent Spending Review settlements for Defra essentially required the Department to make sure it was maintained in real terms.

Q1373 Chairman: It was interesting that we heard from the Chief Executive of BBSRC last week that, in fact, research funds to the research institutes were being cut by Defra, there were all sorts that were spending in those institutes and the chief part of that was perhaps undermining the science which we had built up?

Professor Sir David King: If I may say, I think that the tension between the research budget and delivery in departments is a constant tension, so I feel, for example, that in the Department of Health there has been almost a tradition of R&D budgets being raided for delivery purposes and this is to the detriment of the long-term health of the department. I understand the reasons for the tension, absolutely, but at the same time these create problems in the longer term.

Q1374 Dr Harris: You mentioned, Sir David, that you were concerned that there were not research requests made for a specific purpose to back up a policy, that it was done with equipoise. Can I urge you to consider looking at the Department of Health, and this is not a criticism of the Minister, but in the *Independent on Sunday* on 14 May, it says: "More women should have babies at home, not in hospital, says Health Secretary. Patricia Hewitt is to challenge the assumption that the safest place to give birth is in hospital and that home births can be dangerous." Then the Department of Health says it has commissioned research to support the case for home births. Would you say that sort of announcement, which was made by them, is the sort of thing that might lead you to inquire?

Professor Sir David King: I think that is just phraseology.

Q1375 Dr Harris: Have you investigated it and you are certain that is all it is?

Professor Sir David King: I have not investigated it, no.

Q1376 Dr Harris: Is that the sort of thing you might investigate, if there was concern that actually was what was going on; that what is written on the box is what is actually inside?

Professor Sir David King: My views on that are certainly well known in Government.

Q1377 Dr Harris: To ask a separate question, if someone were not to publish research that was publishable, because they did not want it to get out there, and the people who funded it conspired in that, or they decided that, would you consider that was worthy of investigation, as potential fraud, effectively, or at least research fraud, or at least misuse of public funds if it was publicly funded; the suppression of research findings, or allegations of such?

Professor Sir David King: And the suppression on the basis of?

Q1378 Dr Harris: An allegation made that the research findings had been suppressed for political purposes, say, by a research council or a government department; would that be worthy of investigation and, if so, would you see it as your role to look into it, if allegations like that were made?

Professor Sir David King: Yes.

Q1379 Dr Harris: You will be aware of allegations made by Professor Tim Hope in published articles and indeed in evidence to this Committee, which suggested the Home Office deliberately did not publish one of two case studies in the criminal area because it did not support Home Office policy. Do you think that is worthy of at least investigation and, if so, have you done it, or would you consider doing so, as part of your role?

Professor Sir David King: The answer that I can give very clearly is that I have not done it, but until I had examined a bit more than what you have just told me I am not sure whether I would take it further or not.

Q1380 Dr Harris: You are not aware of that; because it was mentioned again in the *Sunday Telegraph* on Sunday, page lead: "Reed accused of burying bad news by blocking research." Do you have a system in your office that feeds in these sorts of reports, and I know they are only reports at the moment, so that you can investigate it?

Professor Sir David King: My office benefits from the DTI press office and I do tend to get cuttings on a very regular basis, but I did not see that one.

Q1381 Chairman: Your Permanent Secretary should alert you to these things?

Professor Sir David King: I am not sure that it is the Permanent Secretary's job to alert me; it is my private office, I am sure, that does most of that.

Q1382 Dr Harris: Sir David, I think, is probably the best person to start, but please feel free to chip in. Do you think that your understanding of what you call the 'precautionary approach' is the same as the European Union's understanding of what it calls the 'precautionary principle', in terms of its definition and its implementation? If there is a mismatch, what do you think can be done to ensure, given that policy is made both in Europe and here, that there is not a clash between those two?

Professor Sir David King: I do not think there is a clash, if you judge it in terms of output. In other words, there is nothing that we are doing in the

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

British Government, based on my precautionary approach, if you like, that would lead to a different outcome from other European countries operating what you might call a precautionary principle. My objection, if you like, to precautionary principle is that it seemed to be stating something new when, in fact, I think all it was stating is “you should be cautious” and it did not seem to me that it should be embodied in a new, big principle.

Q1383 Dr Harris: You cannot think of any examples where a European Court judgment, for example, Luxembourg has a definition of precautionary principle and therefore has found the UK Government outwith that, because of the different description that certainly you have with your precautionary approach, which you have set out for us in evidence?

Professor Sir David King: What I would say is that we have to live with risk, and risk management is a big part of my job, but that does not mean that you manage risk down to zero. I just want to avoid a “principle” statement which seems to imply that is what you can achieve.

Q1384 Dr Harris: If the European Union, for example, comes up with a Directive, or an attempted Directive on, for example, the use of MRI machines—and I hope you will have seen our Report on this, which touched on this—what do you think you should do within Government to ensure that any problems which were caused in that—and you may not accept our recommendations, we look forward to hearing your response—such problems that were set out there, because of what, I think, we consider to be a different view of what the precautionary principle required, those conflicts are minimised and prevented from happening again?

Professor Sir David King: I think that in any risk analysis there are two words which need to be borne in mind; one is ‘precautionary’ and the other is ‘proportionate’. It is very important that you take ‘proportionate’ into play as well in every situation: ‘proportionate’, in other words, whatever action you take should be proportionate to the risk that is being evaluated. Otherwise you get yourself into an absurd situation; no people should be allowed to cross roads because it is risky to cross roads. I am saying simply proportionate and precautionary are the ways to approach these situations.

Q1385 Dr Harris: Was it proportionate, therefore, to pull all these Cadbury’s chocolate bars, when you would have to eat 200 kilograms to get a dose of this bug that would damage you, it is said?

Professor Sir David King: I can make no comment on that.

Q1386 Dr Harris: Why not? Do you think there is, in the case of the FSA food recalls, a disproportionate response in order to keep public confidence in food, even if each individual case is disproportionate, because that has been put to us?

Professor Sir David King: I think it may not be disproportionate, because I think it is absolutely important that people who produce food produce it under properly standardised conditions, and if they are found not to be operating the conditions required then withdrawal seems to me a reasonable approach.

Sir Brian Bender: Can I say, as the Committee may know, I do some moonlighting, chairing some cross-government work on risk. First of all, I agree with what David said at the beginning, in his first answer to Dr Harris. Secondly, I have read your Report and I agree particularly with what Nick Stern is quoted as saying, where he doubted whether risk analysis can be reduced to one particular principle or role. I agree strongly with that. Thirdly, just picking up the last exchange, the Treasury’s appraisal guidance talks about ‘precautionary action’ and it talks about, in the context of five principles, managing risk to the public, and one of those is ‘proportionality’, and, if the Committee will allow, I will read what it says on proportionality. “Government will act proportionately and consistently in dealing with risks to the public. Government will base all decisions about risk on what serves the public interest. Action to tackle risk to the public will be proportionate to the level of protection needed and targeted to that risk.” That makes it very difficult to generalise; it applies case by case. Certainly I read that as supporting what David was saying in reply to the specific questions.

Q1387 Bob Spink: I just wonder whether you are happy with the way the Government actually communicates this concept of risk to the general public, how that could be improved, whether you think it needs to be improved, whether you think there are some reference points, some benchmarks that the Government could introduce so the Government know what the level risk might be in any particular circumstance? I know, Sir David, you have been very vocal in saying what the risk might be in the case of an avian flu pandemic and you have put figures on that. Do you think the Government can improve its communication of risk?

Professor Sir David King: Yes. I think, again, improvement is always possible. If you take another example, MMR vaccines, we now have measles outbreaks, just as we predicted would happen; we have had the first death, of a 14 year old, and really this should not have happened. Clearly, communication breakdown occurred. It is also a question of media response to the issue. As you know, the Prime Minister has asked myself and the Chief Medical Officer to go and talk to the heads of the major media agencies and discuss risk analysis with them because they need to see the risk to the UK itself, that they raise, when they deal with issues perhaps irresponsibly.

Q1388 Bob Spink: Do you think this is an issue that is of growing importance, given new technologies? For instance, you will recall people talking about ‘grey goo’ and nanotechnology?

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

Mr Darling: I think the point you raise is a very good one, and I agree with what David has been saying. We can always do better but the best way of communicating to the public is to put as many facts as we can in the public domain. Sometimes these things succeed. To give you a different example, again from Transport experience, if you take the risk of rail travel, the response to the last major rail crash in this country was much more measured and mature in this House and in media coverage than it had been on some of the previous ones, because people realise you can reduce those risks but you cannot reduce them to absolute zero. If you look at the reporting around the death of the swan in Fife at Easter-time, there were times when the reporting was so far detached from reality that I suspect the majority of the public just turned away and thought, "Well, we don't know what to believe." The best thing, in these cases, whether it is avian flu or MMR, especially, what David was saying, as we now see what happens as a result of people being frightened of having the necessary vaccinations, is to put the facts, as much as you possibly can, in the public domain. I think that is the way to build people's confidence. To answer your question, of course we can always do better, because you do not have to look very far to see where things could be better; also one does rely, of course, on what one says is being reported, at some stage.

Q1389 Bob Spink: Can I take you back to the political imperative and the electoral cycle; do you think that constrains government horizon-scanning?

Mr Darling: No, I do not think so, because, the sort of horizon-scanning that we are talking about in general, most of it spans at least one, if not two, sometimes three or four general elections already, so I do not think that is a problem at all. I cannot think of everything that we have looked at, or are looking at now, or indeed are likely to look at in the future, where there will be any dispute between the parties that we ought to be looking at it.

Q1390 Bob Spink: You would not accept that politicians are short-term animals because of the electoral cycle?

Mr Darling: There are some politicians who do take very short-term positions and I am sure we can think of many examples; there are others, on the other hand, who take a far-sighted view on behalf of the whole country, of course.

Q1391 Chairman: I am sorry, Alistair, we just cannot let you off the hook there, you know, with respect. We had the Home Office's Chief Scientific Adviser before the Committee, who made it absolutely clear that the connection between horizon-scanning and departmental policy gave us a huge disconnect. He made the point to us that it was difficult to get a department to lift its head above the parapet from the immediate problems actually to engage in horizon-scanning. Was he just talking nonsense, or are they exceptional people that you work with, in terms of horizon-scanning?

Mr Darling: I have not seen his evidence, as far as I know, you have not published it yet, and I do not know the context in which he was either asked the question or was answering it.

Q1392 Chairman: He was answering it generally, as far as the Home Office was concerned.

Mr Darling: I was asked by Bob Spink did I think that short-term political considerations got in the way of the horizon scanning programme, and I answered by saying I did not think so, I have not any evidence that is the case. What you seem to be referring to is a slightly different point, and that is it can be difficult, in some cases, to get departments, ministers, top civil servants, to raise their eyes from immediate problems and start looking at the long term. I am not in a position to comment on what he was saying, because I do not know what actually he was talking about, but of course it is the case that if the department is so involved in day-to-day matters then I can quite see that, frankly, what happens in 10 years' time may not be the thing that is top of the in-tray. What I did say earlier though is that across government generally I think departments are much better now at dealing with not only today's problems but, in particular, looking at the longer-term questions. I cannot really comment on something where I do not actually know what the fellow was saying.

Q1393 Chairman: I accept that. I think the point that Paul Wiles was making is that, yes, there is some excellent horizon-scanning going on but there is a disconnect between horizon-scanning and what actually happens in the departments?

Mr Darling: I can see that could happen.

Q1394 Chairman: Did it not happen in Transport?

Mr Darling: From my experience of working in Transport, and I suppose in Social Security in 1998, when you get to a department, if it is so busy fire-fighting that you do not have any time for anything else, and someone says, "How about looking at this problem which is going to arise in 50 years' time?" there is a very short answer to be given to that. However, it seems to me, the answer to that is you sort out today's problems and you manage things so that you are on an even keel, but any sensible department, any sensible secretary of state, must look at not just today's problems but has got to look at tomorrow's problems as well, otherwise, sooner or later, you will end up in another crisis. As I say, that is a general comment, not a comment on whatever evidence you heard.

Q1395 Bob Spink: There has been horizon-scanning on EU Directives, for instance. You mentioned the REACH Directive; that has got enormous competitiveness and cost implications on industry and it is taking a different view on the management of risk from the model used in Japan and in the USA. There was clearly no real horizon-scanning; that was a political imperative, just as the MRI Directive which came out is seen now to be a poor Directive,

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

because there was not sufficient horizon-scanning. Does this not cause you concern, particularly from the European front?

Sir Brian Bender: You then get into the question of how effectively one can negotiate in Europe, and the models where things go well are where we are influencing the Commission proposal which emerges; the models where they go less well is when actually, once the proposal is on the table, if it is in the wrong shape then we are into damage limitation. We do our best and in some cases we have great successes, in other areas we end up with rather messy Directives. The Waste Electrical and Electronic Equipment Directive, which DTI is trying to administer at the moment, is not a very well drafted Directive and we are finding difficulty in implementing it effectively. We could roll back the clock several years and say, in a better world, we would have approached this negotiation in this sort of a way, and no doubt there are lessons we can learn then for a future negotiation; but, unfortunately, we live in a messier world.

Bob Spink: In drawing attention to the planning gap, again, which you did right at the very start of your comments, about an hour and a half ago, you seemed to be agreeing that horizon-scanning has not been all it should be, and perhaps there is room for a lot of improvement there?

Q1396 Chairman: David, do you want to comment on this?

Professor Sir David King: Yes, please. If we go back to the foot and mouth disease epidemic 2001, that was a situation where I had to abandon everything else I was doing and go 100% into foot and mouth disease and modelling and then fly around the country, doing what I could to bring it under control, using the MAFF resources. That is a situation where you give up looking at the longer term. What I came away from that feeling was that I never wanted to be in a situation like that again, where I was unprepared for such a situation, so horizon-scanning foresight is then the tool to prepare yourself, to avoid being placed in such a situation. For example, we are now advising Government to develop a tool that would enable us, if we had another foot and mouth disease epidemic, and we had this tool, and the tool that we are advising looks like a mobile 'phone, and yet at the end you would have a PCR device which you could stick into the mouth of an animal and tell what disease that animal had within 30 seconds or a minute, then you ping through the information to the headquarters here and you can map out immediately, in real time, on a map, how the disease is spreading. If we had such a device, we could run our models, the same epidemic, instead of costing the country £7 billion, it would cost about £70 million to bring it under control. This is a piece of foresight where we are looking ahead in time and saying "This is what we could have done with." It will take probably 10 years to develop this; but with that tool we would be able to handle worldwide epidemics, in real time, in the same way, so enormous power in foresight. What I am coming to

is that the Government has changed direction in its Foresight activity, which I run. The Foresight is now an in-depth process, it looks at specific examples; what I am quoting to you from was our project on infectious diseases, in which, for the first time worldwide, we brought into play animal, human and plant diseases, and we came up with a set of recommendations which are playing out not only through this Government but through the World Health Organisation, the OIE and the FAO. We are having an impact internationally; it is playing into the G8 meeting in St Petersburg. Why is it playing in so broadly internationally? We have had the first five years of this new Foresight process reviewed and the outcome of the review is, essentially, we are ahead of the rest of the world; there is no other country which has a Foresight programme of this nature that is having so much impact across Government. We could not be having that impact unless Government was prepared to respond to situations which really are running forward from 10 to 80 years into the future. My response to the question that Bob has raised is I can give you many good examples, of course, you can also give bad examples, but I can give you many good examples.

Q1397 Bob Spink: Let me give you the opportunity to give a good example. The point Professor Wiles really was making was not that horizon-scanning was not happening, you have done horizon-scanning, for instance, on the avian influenza pandemic, but that it does not result in the necessary action. Can you tell me, has your horizon-scanning on the possible avian flu pandemic shown that there is a lack of capacity to manufacture vaccines, if it ever happened, and what are you doing about that?

Professor Sir David King: The short answer is, first of all, if I may here rephrase your question, there are two possible epidemics. One is avian flu, which is the phrase you used, which means flu within the bird population.

Q1398 Bob Spink: I mean mutation back to humans?

Professor Sir David King: My answer to that question is, yes, I think that we are probably better prepared than any other country, in terms of our preparations to handle wild birds arriving with avian flu, which is likely to occur in August or September this year. On the other hand is the potential outbreak of a human pandemic, which is a variation of the current virus.

Q1399 Bob Spink: That is what I am talking about.

Professor Sir David King: That is what your question was aimed at. On that, every country in the world is concerned about the actions that are required to be taken. For example, is it possible to quench the outbreak, if it occurred somewhere in the African continent, before it becomes a human pandemic across the world; that is the first question, it is an international question, which is why I am raising these international bodies. Then we come down to Britain, the UK, have we got the vaccine capacity to handle such a situation; but that is only one of the questions. What about pre-pandemic vaccine, what

about anti-virals; and, of course, the Government is rolling out a whole series of defences against a potential pandemic.

Q1400 Chairman: I am sorry, we have to move on. I want to finish this session at half-past, because you have given us an enormous of time. Just on the last section, if we can have a very brief answer, Alistair, clearly you get evidence from the research base, in terms of policy within the DTI; you get advice from Sir David and also from Sir Keith, as the Department's Chief Scientific Adviser, would you be happy to publish that advice?

Mr Darling: I think there is a distinction here we have been talking about, in relation to general advice we commission, from outside bodies, and so on; what I do not think ought to be published is what you might call advice to ministers, which successive governments have protected, the Freedom of Information legislation protects, because ministers must have at their disposal information that will allow them to reach a decision. If you get to a situation where, frankly, people stop giving you advice and you say "I don't want anything in writing," that just gets to a ridiculous position. I think, consistent with everything I have said, that, wherever possible, you should be open as possible, you should publish information you get, but I think it has long been recognised that there is a separate category of advice, which, as I say, the legislation recognises, in relation to advice to ministers, where it is perfectly reasonable for any government, of whatever political colour, to say "That needs to be protected."

Q1401 Adam Afriyie: Public consultations often create a great deal of anxiety and stress and unhappiness among participants; so, for example, when questions are asked, somebody participating will have the raised expectation that their answer may change the outcome. Also certain risks and threats are highlighted to people in public consultations, which otherwise they would not consider and they begin to think about a lot more. My first question to Alistair is how useful are consultations in evidence-based policy-making, in your view?

Mr Darling: They are useful, quite simply because in a number of cases the Government does not know the answer. We may want to go out because we are not sure whether or not a particular proposition is the right thing to do. There are other areas where, for example, we need to say, okay, this is something where a group of people say something ought to happen but how widespread is that feeling, let us have a wider consultation on it. I quite accept your point that if you raise a consultation you raise a doubt in someone's mind as to whether or not you are going to do something, you can possibly raise people's expectations if you decide, at the end of the day, not to do something, but I think there are many occasions when consultation is highly desirable.

Q1402 Adam Afriyie: Sir David, what are the most effective methods of canvassing public opinion on a scientific matter, if you like, where there is science involved; what is the best method, in your view, of collecting, or canvassing, those opinions, which perhaps does not create so much stress or concern?

Professor Sir David King: What I think we are pioneering in Britain is the notion of moving on from the old phrase 'public understanding of science' to the phrase 'public engagement with science' and, within the Office of Science and Innovation, we have a programme headed Sciencewise, and it is run by Professor Kathy Sykes, of Bristol University, and through our Office, under the Science and Society team. Sciencewise has been run out as an initial programme on nanotechnology and we have gone into towns around the UK and set up discussions with, effectively, randomly-chosen members of the public. These discussions have proceeded by, first of all, finding out their opinions on nanotechnology, then discussing their opinions, exchanging views with groups of scientists who work in nanotechnology, and then, six weeks later, finding out again what their positions are. The final outcome, by the way, is always we come out with very sophisticated views from the public, arising from this kind of direct engagement.

Q1403 Adam Afriyie: Thank you very much. A final question, to Sir Brian, as Permanent Secretary, what if the views from public opinion which come through completely contradict the scientific evidence; what happens there?

Sir Brian Bender: Clearly, we would need to analyse quite what was going on. I can think of one example that David was involved in just after the foot and mouth disease outbreak, about animal movements, where there was some further scientific evidence about maintaining movement restrictions for longer and then the response to the consultations not only indicated opposition but actually indicated that there was a conflict between the science and the economics and also there was a risk that the harder we went down the pure scientific route the less implemented the law would be. Therefore, there was a balance of judgment to be made, and David was involved in the advice that went to, I guess it was, Margaret Beckett, at the time, and she ended up taking a view that he was content with, but it did not follow, if I can put it, the milk and honey of the initial scientific advice because, actually, following that might have led to a law that was probably breached and therefore led to worse outcomes. That is just one example. I think we have to assess, in any of these cases, exactly what people are saying and why, and then, as the Secretary of State was saying earlier, that is what ministers are for.

Chairman: Just finally, can I ask both Alistair and David, in terms of the media, you mentioned the media earlier and how important it is actually to have a positive engagement with the media, in terms of science? I think, Kathy Sykes's programme, engaging with science is the right terminology, but do you feel, Alistair, that the Government gives enough time actually to engaging properly with the

5 July 2006 Rt Hon Alistair Darling MP, Professor Sir David King and Sir Brian Bender KCB

media, in terms of getting messages over about science? Issues, like GM, for instance, which was very badly handled, the nuclear issue you could perhaps argue again is a difficult concept which it is important to engage; and do you think, in terms of your profile, David, it is important that you have had a high media profile and that other senior scientific advisers, departmental advisers, should also have a high media profile within their departments? Could we have written answers to those questions, so that I can close this session, at this moment in time, and thank Sir Brian Bender, Alistair Darling and Sir David King for your attendance this afternoon.

Written evidence

APPENDIX 1

Memorandum from Government

1. EXECUTIVE SUMMARY

1.1 This Evidence seeks to describe how the framework that underpins how Government obtains and uses scientific advice has progressed since the Committee's "*Scientific Advisory System*" Inquiry Report of 2000–01.

1.2 While not a new concept, the current emphasis on evidence-based policy making has its roots in Government's commitment to "what works" over ideologically driven policy, and in the Modernising Government agenda. The Cabinet Office's (1999) *Professional policy making for the twenty first century*¹ identified nine features of better policy making. Two of the nine explicitly relate to better use of evidence (evidence-based and evaluated). The remaining factors either entail a strong evidence component (forward-looking, outward looking, joined up and inclusive) or create the conditions for effective use of evidence (reviews, lessons learned, innovative).

1.3 Policy makers across government can draw on a variety of sources of evidence produced inside and outside of government. Each Department draws on a different mix of specialists, organised into a number of cross government professional groups including Scientists, Social Researchers [see Section 5 below], Economists, Statisticians and Operational Researchers [see Annex C]. Collectively, they contribute to all the stages of the policy and delivery processes—development, monitoring and evaluation of policy and delivery options—by undertaking or procuring research and analysis, reviewing national and international research evidence and advising on the interpretation of data.

1.4 Specifically for scientific evidence, the Government Chief Scientific Adviser (GCSA), supported by the Office of Science and Technology (OST) leads on promoting scientific advice in policy making, promoting core guidance and best practice across the Departments.

1.5 The Committee will be aware that the House of Lords Economic Affairs Committee Inquiry ("*Government Policy on the Management of Risk*") has received evidence from Treasury and that the Public Administration Committee Inquiry ("*Governing the Future*") has received evidence from the Office of Science and Technology on the Foresight Programme. Both Committees have seen copies of the Government Chief Scientific Adviser's "*Guidelines on Scientific Analysis in Policy Making*".

2. CENTRAL COORDINATION AND SUPPORT

2.1 At the request of both the Prime Minister and Treasury, the Government Chief Scientific Adviser (GCSA), Professor Sir David King, has promoted the changes sought, informed by the Cross Cutting Review (2002)² and Phillips Report (July 2000).³ He does this through participation in Cabinet committees (eg Science and Innovation (SI⁴), Ministerial Committee on Animal Rights Activists (MISC13⁵), and Ministerial Committee on Influenza Pandemic Planning (MISC32⁶)) and subcommittees. He also leads *ad hoc* advisory groups to meet particular challenges (eg GM Science, Natural Hazards Avian Flu, and Biometrics)⁷. He also meets regularly with Ministers and Permanent Secretaries across Government. He also sits on the Council for Science and Technology which provides authoritative independent advice to Government. He chairs the Chief Scientific Adviser's Committee (CSAC) whose membership comprises departmental Chief Scientific Advisers (DCSAs). In 2005, an officials group was established to help prepare the work-programme for CSAC—membership is drawn from all DSAC offices.

2.2 The GCSA is responsible to the Prime Minister for the quality of scientific advice within Government. The appointment is initially for a fixed term of five years and requires experience at the cutting edge of science to ensure credibility both within government and more widely with the scientific, public and business communities. He is located in DTI for administrative purposes because the Secretary of State for Trade and Industry holds the Cabinet portfolio for science policy. However, it should be noted that the GCSA provides independent *advice* to the government, it is for the PM and Cabinet to decide whether to act on this advice.

¹ Professional Policy making for the 21st Century (Sept 1999): <http://www.policyhub.gov.uk/docs/profpolicymaking.pdf>

² Cross Cutting Review: www.ost.gov.uk/policy/advice/crosscut.htm (Mar 2002).

³ Philips Report: <http://www.bseinquiry.gov.uk/report/volume1/toc.htm> (Oct 2000); Government's Response: www.defra.gov.uk/animalh/bse/general/response.pdf (Sept 2001).

⁴ SI Committee Composition: <http://www.cabinetoffice.gov.uk/secretariats/committees/si.asp>

⁵ MISC13 Committee: <http://www.cabinetoffice.gov.uk/secretariats/committees/misc13.asp>

⁶ MISC32 Committee: <http://www.cabinetoffice.gov.uk/secretariats/committees/misc32.asp>

⁷ Current policy areas involving the GCSA: <http://www.ost.gov.uk/policy/issues/>

2.3 On a quarterly basis, CSAC brings together the Departmental Chief Scientific Advisers to discuss transdepartmental issues and stimulate best practice in the use of scientific research and analysis in support of Government policymaking. When agenda items arise that require more immediate discussion or resolution, ad hoc meetings are called with variable geometry in the membership to match the agenda item. Sub-groups are established to progress policy discussion in specific areas such as horizon scanning and a science in society champion's network. Other items are dealt with through correspondence.

2.4 The role of CSAC complements that of the Coordination of Research and Analysis Group (CRAG), chaired by Sir Brian Bender. CRAG Membership is drawn from the Heads of Profession for all analytical professions outside the scientific professions (*see* Section 6 for a fuller description of CRAG). CSAC and CRAG have worked particularly closely together to contribute to the analytical work of Treasury in developing the Comprehensive Spending Review (CSR 2006).

3. DEPARTMENTAL CHIEF SCIENTIFIC ADVISERS AND SUPPORT

3.1 Departmental Chief Scientific Advisers (DCSAs) have direct access to Ministers and their own Departmental Boards to bring to bear scientific advice in wider Departmental policies, finance, and strategy. They should provide professional leadership for the science and engineering personnel in their Departments and Agencies as well as support the intelligent customer function in Departments for scientific advice. DCSA appointments, where selected from outside the civil service, are for fixed terms. More detailed profiles of each DCSA can be found in Annex D to this Memorandum ("Induction Pack for DCSAs"—especially Annex 5 of the Induction Pack) (not published). It can be noted that in appropriate cases, the DCSAs are drawn from the social sciences or are economists (eg Professor Paul Wiles in the Home Office; John Elliott in DfES).

3.2 A majority of departments also have Scientific Advisory Committees (SACs)⁸ to advise in particular issues. OST are currently looking to update the Code of Practice governing SACs⁹ and as part of this, will be engaging with SAC members and secretariats on what they feel should be covered in the Code.

3.3 The Office of Science and Technology (OST) supports the GCSA in improving Government performance in identification and application of scientific evidence supporting individual policies and spread of best practice in Trans-Departmental policy collaboration (eg driving forward work on three "grand challenges" to scientific evidence in support of policies on ageing, domestic consumer carbon footprints, and challenges of real-time data handling). OST "issue teams" support the GCSA on coordinating responses to pressing and important crosscutting policy issues with significant scientific inputs. They look to ensure that science is effectively used in policy making and delivery. Through their regular contacts with other government departments, they also provide an "early warning system" for potentially contentious issues. Key issues at present include energy, climate change, nanotechnology and avian/pandemic flu. Foot and mouth, BSE, GM and stem cells are examples of past issues where the GCSA has played a significant role.

3.4 OST also supports the GCSA in his new and developing role as Head of Scientific and Engineering Profession (HoSEP), where he seeks to give leadership and greater visibility to the role of scientists in support of overall Government policy. This role complements the Departmental Heads of Scientific Profession and corresponding heads of profession for other analytical disciplines.

3.5 In pursuit of the terms of reference identified by the Government's Cross-Cutting Review (2000) and 10-year Science and Innovation Investment Framework (March 2004)¹⁰, OST seeks to ensure "fitness for purpose" and consistency of approach in other government departments (OGDs). OGDs with significant needs for scientific advice are required to publish robust Science and Innovation Strategies and appoint their own Departmental Chief Scientific Advisers (DCSAs) to oversee Departmental exploitation of scientific evidence. That process is nearing completion.

3.6 OST's Science Review team¹¹ is undertaking a rolling programme of in-depth analysis of each Department's management of scientific evidence, and the use of this evidence base in policy making, in advice and guidelines provided to the public and in the strategic and operational management of the Department. A Science Review of Department of Culture Media and Sport (DCMS) was published in 2004, with Science Reviews of the Health and Safety Executive (HSE), the Department of Environment Food and Rural Affairs (Defra) and the Office of the Deputy Prime Minister (ODPM) currently being conducted. Further Science Reviews are being planned for the next financial year.

⁸ List of SAC Committees: http://www.ost.gov.uk/policy/advice/copsac_committees/index.htm (please note this is currently being updated).

⁹ Code of Practice for Scientific Advisory Committees: <http://www.ost.gov.uk/policy/advice/copsac/index.htm>

¹⁰ 10-year Science and Innovation Investment Framework: http://www.hm-treasury.gov.uk/media/D13/9D/science_406.pdf (March 2004).

¹¹ Science Review Objectives: <http://www.ost.gov.uk/policy/sciencereview/background.htm>

3.7 OST has been working closely with Treasury during the current Comprehensive Spending Review (CSR 2006) to secure the contribution of scientific analysis and evidence to the five “key challenges” identified for the CSR¹².

3.8 OST works closely with DTI’s Innovation Group, DfES and Treasury to produce annual reports on the Government’s 10-year Science and Innovation Investment Framework (published around June/July each year). The annual report focuses on Departmental progress towards achieving the key attributes identified in Chapter 8—“Attributes for the effective management of science and research across Government”¹³. OST are currently mapping their monitoring and evaluation activity in preparation for this.

3.9 Longer term planning of departmental policies and resources are supported by OST’s recently established centre of excellence in Horizon Scanning alongside other departmental long-term policy planning resources. Collectively, these resources identify enablers and inhibitors on emerging areas of science and technology that are most likely to effect longer-term departmental policies. OST also runs the UK Foresight Programme which creates challenging visions of the future to ensure effective strategies now, by looking in greater detail into particular scientific areas of interest to Government. These include areas where science can help decision-makers to get a better understanding of and find new ways to tackle major societal challenges. Recent projects have looked at Cyber Trust and Crime Prevention (CTCP), Exploiting the Electromagnetic Spectrum, and Brain Science. Addition and Drugs Each Foresight Project is overseen by High-Level Stakeholder Group chaired by a sponsor Minister in the most appropriate Department for example, Home Office in the case of the CTCP Project. The Stakeholder Group is reconvened one year after the launch of a project’s findings and action plan to review the projects outputs, and the outcomes that are resulting. Full details of the Horizon Scanning Centre, the Foresight Programme and all projects are available on the website¹⁴.

3.10 OST offers several examples of central guidance that benefit other departments, their Advisory Committees and Agencies, NDPB’s and improved public trust in the Government’s use of scientific evidence. These include:

- Guidelines on Scientific Analysis in Policymaking 2005¹⁵ (this has been regularly updated since it was first issued in 1997, in 2000 and again last year in full consultation with interested parties).
- Code of Practice for Scientific Advisory Committees.
- Promoting Science in Society agenda¹⁶, which seeks improved trust and understanding of the place of science in society alongside the government’s own use of scientific advice. This work recognises not only the importance of evidence-based decision-making but transparency and clarity in communicating about science in society and the use of evidence. In particular, the OST runs the Government’s Sciencewise programme that enables citizens, scientists and policy makers to engage in open, constructive and informed dialogue on issues related to new and emerging areas of science and technology (such as nanotechnologies, stem cells and brain science)¹⁷. This programme is underpinned by a set of guiding principles that represent current best practice in conducting public dialogue on science and technology¹⁸.
- “Rigour, respect and responsibility: a universal ethical code for scientists” (January 2006)—produced by a small group reporting to the GCSA to inform scientists both inside and outside Government.
- “Induction Pack for newly appointed Departmental Chief Scientific Advisors”—this OST document summarises the broad environment in which Departmental CSAs and their support teams operate and the networks available to them (Annex D) (not published).

4. FURTHER SOURCES OF EVIDENCE AND ADVICE

4.1 The Council of Science and Technology is the Government’s top-level independent advisory committee on S&T issues¹⁹. It has produced reports on better use of personal information; an electricity supply strategy for the UK; and policy through dialogue²⁰. Government is required to make a formal response to CST reports. Particularly relevant for this Select Committee Inquiry are the reports on “*Policy through dialogue*” (2005) and “*Better use of personal information: opportunities and risks*”²¹.

4.2 Further advice on the use of scientific advice is made available to Departments through:

¹² HMT Press Notice announcing the Second Comprehensive Spending Review: http://www.hm-treasury.gov.uk/newsroom_and_speeches/press/2005/press_65_05.cfm (19 July 2005).

¹³ 10-year Investment Framework, Chapter 8: http://www.hm-treasury.gov.uk/media/7FC/F1/spend04_sciencedoc_8-9_090704.pdf

¹⁴ Foresight Programmes List: www.foresight.gov.uk

¹⁵ Guidelines 2005: http://www.ost.gov.uk/policy/advice/guidelines_2005.htm

¹⁶ Science in Society: <http://www.ost.gov.uk/society/index.htm>

¹⁷ Sciencewise programme: www.sciencewise.org.uk

¹⁸ Conducting Public Dialogue: www.ost.gov.uk/society/public_dialogue.htm

¹⁹ CST Reports: <http://www.cst.gov.uk/cst/reports/>

²⁰ See the CST Annual Report at www.cst.gov.uk

²¹ CST Report on Personal Information: <http://www2.cst.gov.uk/cst/reports/#8>

- ¹ Global Science and Innovation Forum (GSIF²²)—arising from a recommendation of the 10-year Investment Framework, GSIF, chaired by GCSA offers a forum for discussion of the international dimension of science;
- Scientific Advisory Panel for Emergency Response (SAPER)—a committee of internal and external experts set up to improve the quality and exploitation of scientific evidence in crisis handling, chaired by the GCSA;
- Scientific Advisory Committees; and
- The Research Base Funders' Forum²³, which includes senior representatives from across Government, Research Councils, Higher Education Funding Councils, Charities, Business and Regional Development Agencies. It allows the governmental and non-governmental funders of “public good” research to consider the collective impact of their strategies on the sustainability, health and outputs of the UK Science Research Base and helps to provide input towards future policy development. Chaired by Sir Keith O’Nions.

4.3 Government is committed to making the scientific evidence base public via the Freedom of Information Act, departmental publication schemes and other levers. OST has recently begun to work with departments and the Government Communications Network²⁴ to ensure that evidence is presented as transparently and effectively as possible.

5. ARRANGEMENTS FOR SOCIAL SCIENCE

Central coordination and support

5.1 Social science analysts in government are organised into four main professional groups—Social Researchers, Economists, Statisticians, and Operational Researchers. In each case, a central Chief of Profession oversees the strategic direction and specific quality standards for each professional group, to complement the general advice on use of science produced by OST. Each Chief of Profession works with and through departmental Heads of Profession who are responsible for implementing professional standards within departments.

5.2 Dr Sue Duncan, the Chief Government Social Researcher and Professor Sir Nicholas Stern, the Head of the Government Economic Service are both based at the Treasury. Karen Dunnell, the National Statistician is based at the Office for National Statistics, and Tony O’Connor, the Chief Operational Research Analyst is based in the Prime Minister’s Delivery Unit at the Cabinet Office.

5.3 These individuals are all represented on the Coordination of Research and Analysis Group (Section 4 below), but they and their units additionally liaise on a day-to-day basis to promote commonality across the professions on issues such as recruitment, professional development, management arrangements and standards.

5.4 Information on the Government Social Research service is presented below. Further detail on the other social science professions is provided in Annex C.

Central Support for Social Research

5.5 Social research uses the methods of scientific enquiry—such as surveys qualitative research, analysis of administrative and statistical data, case studies and controlled trials—to measure, describe, explain and predict social and economic change. The Government Social Research service (GSR) exists to provide government with objective, reliable, relevant and timely social research to inform policy-making and delivery. There are currently more than 1,000 members of GSR across 20 government departments, agencies and the devolved administrations.

5.6 The role of Chief Government Social Researcher (CGSR) was established in 2002 to provide strategic leadership to GSR and support it in delivering an effective service. Dr Sue Duncan has filled the role since its inception and is supported by the Government Social Research Unit (GSRU). She and GSRU are based at HMT (having moved recently from the Cabinet Office as part of machinery of government changes). As well as leading GSR, the Chief Government Social Researcher plays a key role in ensuring that the work of social researchers is coordinated with that of other government analysts, and with the wider research community. To that end she was instrumental in the establishment of the government Coordination of Research and Analysis Group (CRAG—see Section 4 below), is a member of a number of Professional Organisations, and sits on a wide variety of academic and market research committees.

²² GSIF: http://www.ost.gov.uk/ostinternational/world/2_2.htm

²³ Research Base Funders Forum: <http://www.ost.gov.uk/fundersforum/>

²⁴ Government Communications Network: <http://www.comms.gov.uk/default.htm>

5.7 GSRU has a broad role in promoting the use of evidence in strategy, policy and delivery and leads on strategic social research issues and standards for social research in government. It represents the Government Social Research service and its work within government and the wider research community. It also provides practical support and advice to departments on the organisation and delivery of research, and on recruitment, development and training issues.

5.8 The Chief Government Social Researcher has no direct control over the organisation or execution of social research in government departments, but influences this by working with and through the GSR Heads of Profession Strategy Board. The Strategy Board comprises a subset of departmental Heads of Profession (HoPs) for Social Research work and advises the CGSR on: identifying emergent and current issues of relevance to GSR and agreeing appropriate action; coordinating a GSR view in response to initiatives and announcements in central government; and issuing central guidance and protocols on specific issues. Recent professional guidance for GSR members has included:

- GSR Competency Framework²⁵—setting out a set of competencies relevant to research work across staff grades in GSR.
- GSR Recruitment Protocol²⁶—for staff who are recruiting and promoting staff within GSR, or recruiting from outside the civil service.
- *Ethical Assurance for Social Research in Government*²⁷—a set of ethical standards for use across government and a system to help embed these into daily working practice.
- The “Magenta Book”²⁸—a guidance manual on good practice in policy evaluation.

5.9 Guidance is in the process of being finalised on research procurement, and publication of research outputs.

Departmental arrangements for social science analysis

5.10 Departmental social science analysts across the four social science professional groups produce (or procure) evidence for policy and delivery colleagues in a number of different ways, including:

- Production and analysis of statistics and qualitative data on policy and delivery issues derived from administrative data, surveys, focus groups and other methods of data collection.
- Reviewing, synthesising and analysing national and international research evidence in specific policy areas.
- Scanning future trends and seeking out developments elsewhere to generate options.
- Applying social science theory to the analysis of policy problems—helping policy makers and deliverers to: clarify and articulate policy problems, objectives and expected outcomes; and to identify the most promising mechanisms by which they might be achieved.
- Research and analysis to evaluate (in terms of cost-benefits, practicability, acceptability to key stakeholders, interaction with other policy areas and so on) policy options prior to implementation; and to monitor and evaluate ongoing policies and programmes once implemented.

5.11 The contribution of Social Science professionals therefore goes beyond the production of research and analysis to meet the current needs of policy makers. They also need to anticipate future needs to ensure the right evidence is available in the future; and to contribute their professional judgement to help policy makers and delivery experts to understand the policy implications of evidence.

5.12 In order to fulfil this wider brief, departmental analysts need to work very closely with policy experts while retaining a strong professional identity. The trend in many departments is for social science analysts to form an integral part of policy teams, rather than being based in separate analytical divisions. Increasingly, social scientists are organised into multi-disciplinary teams, rather than single profession groups.

5.13 Within departments, separate Heads of Profession for each analytical specialism operating in the department oversee quality standards and professional issues. These HoPs are typically accountable to Ministers for delivering agreed programmes of analytical work, but to central Chiefs of Profession (National Statistician, Chief Economist, Chief Government Social Researcher, and Chief Government Operational Researcher) for professional issues. These professional issues typically include: the capability and career development of staff; strategic resource planning; and the quality and integrity of analytical work and outputs; and the representation of the department’s analytical work with the wider community.

²⁵ http://www.gsr.gov.uk/professional_development/competencies.asp

²⁶ <http://www.gsr.gov.uk/recruitment/protocol.asp>

²⁷ http://www.gsr.gov.uk/professional_guidance/ethics.asp

²⁸ Magenta Handbook: http://www.gsr.gov.uk/professional_guidance/magenta_book/index.asp

5.14 In some departments, a chief departmental analyst oversees social science input to the policy process. This person is ultimately responsible for ensuring the department has appropriate analytic capacity, and that the work of departmental social science analysts is robust, timely and relevant. In a minority of departments (for example, Home Office and DEFRA) the senior social science analyst is also the Chief Scientific Adviser.

6. COORDINATION ACROSS ANALYTICAL AND POLICY PROFESSIONS

6.1 CRAG was established in December 2004 to promote better dialogue between policy experts and the full range of analytical disciplines within government. The group provides a unique forum for policy experts and analysts from all disciplines to work together on crosscutting issues. Its membership includes the central Chiefs of Science, Medicine and Social Science professions, Directors of the Prime Minister's Delivery and Strategy Units, the Director of Research Councils UK, and a number of departmental Strategy Directors. Sir Brian Bender, Head of Profession for Policy Delivery and Department of Trade & Industry Permanent Secretary, chairs the Group and the Chief Government Social Researcher oversees its Secretariat.

6.2 In Spring 2005, CRAG led a government-wide exercise to identify crosscutting, analytical priorities and to consider the mechanisms needed to tackle them. Four priority themes were chosen (ageing population, migration, changing global economy, and public policy and service delivery). Permanent secretaries supported scoping work on these themes in order to: define the policy issues, share what is already known, and identify existing evidence gaps and commission new research accordingly. The work is being linked to the Comprehensive Spending Review process where relevant.

6.3 In addition to work on the four themes, CRAG continues to work to meet its original objectives to improve knowledge management and research planning across government. It is, for example, encouraging the bringing together of a host of initiatives on data sharing with a view to removing duplication and establishing a more strategic approach to data needs for now and the longer term. It is also working with the ESRC and other major research funders on a strategy to identify future data needs.

January 2006

Annex

BRIEF SUMMARY OF GOVERNMENT ANALYTICAL SERVICES

- (1) Government Statistical Service (GSS).
- (2) Government Operational Research Service (GORS).
- (3) Government Economic Service (GES).

1. GOVERNMENT STATISTICAL SERVICE (GSS) MODEL FOR DELIVERING EVIDENCE INTO POLICY MAKING

1.1 The GSS strives to provide a statistical service that is independent and open and responsive to society's needs and the public agenda through better and more reliable official statistics that command public confidence. To achieve this objective a number of strands need to be in place and effectively supported by all stakeholders.

1.2 The following summary highlights four key strands and describes at a very high level how statisticians deliver evidence into policy making across government:

Ensuring relevance of statistics

1.3 Important tools which help to set standards, agree responsibilities and measure the impact and direction of statistical input are:

- Service Level Agreements (SLAs) with key government departments.
- National Statistics Work Programme—statisticians play an important role in helping to scan the horizon for economic and social issues that may impact on future government policies. This, together with wider user consultation, helps to set priorities for the Work Programme, and looks at activities over a three year period.
- The National Statistician also looks for other opportunities to influence and engage stakeholders, eg at Permanent Secretaries meetings.

High quality, trusted statistics

1.4 The *National Statistics Code of Practice*, and its 12 supporting protocols, set the standards for which all National Statistics activities and processes (outputs and people) should be measured against:

- The National Statistician—as “owner” and final arbiter of the Code has overall responsibility for the professional statistical quality of all NS outputs. The Code sets a benchmark of professional standards, which have been designed, among other things, to improve public confidence in official statistics by demonstrating that they are produced to best professional standards and free from political interference.
- GSS Heads of Profession (HoP)—support the National Statistician and are accountable to their departmental Ministers for the work plans for National Statistics, and are accountable to the National Statistician for the professional statistical quality of the National Statistics they produce, and the professional development of their statistical work force.
- The Statistics Commission—is an independent non-departmental public body. It helps to ensure that official statistics are trustworthy and responsive to public needs. It operates independently of both Ministers and the producers of statistics.

Skilled, mobile workforce

1.5 Over 1,000 professional statisticians are known collectively as the Statistician Group and are located in over 30 government departments, agencies and devolved administrations. Statisticians both fast stream and mainstream, are encouraged to move around the GSS to expand their skills and develop their networks.

- The Statisticians in Government Team (SiGT) manage recruitment and development for the Statistician Group and work closely with HoP and the GSS Human Resources Committee to set and monitor standards, and develop new human resource initiatives. The Team also manages Statnet—the GSS intranet.
- The Statistician Group Continuing Professional Development (CPD) Framework helps to ensure that statistical staff acquire and retain the range of skills necessary to perform effectively throughout their careers. It also links with the Statistician Competence Framework; the National Statistics Protocol on Professional Competence; and with the Professional Skills for Government initiative.
- GSS conferences provide an excellent opportunity for statisticians to build strategies and share good practice.
- Statisticians often link up with other analytical professions to provide insightful multi-disciplinary analysis. An increasing number of departments are building mixed analytical teams as part of their workforce.

Understanding evidence

1.6 The following are examples of how statisticians help policy makers understand evidence.

- There is a key role for HoP/statisticians to present evidence in a format appropriate for policy makers. Joining the data through research, operational intelligence, and economic analysis, to enable better understanding of issues is key.
- Quality statements and revisions analyses help to underpin the authority of statistical releases.
- The “*Analysis and Use of Evidence*” competence framework developed for PSG by a mixed analytical team.
- The National Statistics web site: <http://www.statistics.gov.uk/about/default.asp>

2. GOVERNMENT OPERATIONAL RESEARCH SERVICE (GORS)

2.1 There are currently 330 Government Operational Researchers spread over most Government Departments. The groups vary significantly in size and structure but are usually brigaded alongside similar analytical professionals like Economists, Statisticians and Social Researchers as part of the department’s analytical capacity.

2.2 They provide an analytic resource to departments using a wide range of numerical tools and techniques to improve the effectiveness and efficiency of policies.

2.3 They are recruited centrally and their careers are managed by the GORS Management committee made up from the Heads of Profession from each department. Minimum requirements for new recruits are graduates with a good numerate degree.

2.4 The current Chair of GORS is Tony O’Connor (Chief Operational Research Analyst, Prime Minister’s Delivery Unit, Cabinet Office).

2.5 GORS aims to maximise the benefit which Departments obtain from deploying OR skills in the design, implementation and evaluation of their policies and strategies and of their programmes for service delivery.

2.6 Its key objectives are therefore:

- To help ensure that what OR can offer and how it can be used to best effect is appreciated across Government.
- To help departments to obtain, retain and develop competent, well-qualified professional staff to work in Government OR groups.
- To maintain professional standards and promote good practice.
- To promote and facilitate synergy and cross-fertilisation among OR and related analytic groups.

3. GOVERNMENT ECONOMIC SERVICE (GES)

3.1 Members of the Government Economic Service (GES) bring economic analysis to the policy-making process in government, using basic economic principles and empirical evidence to analyse proposals for the allocation of limited resources. They use a range of tools including the key principles of public economics, an economic understanding of markets, incentives and institutions, cost-benefit analysis and econometric modelling, as well as providing less technical advice. They work closely with policy and analytical colleagues and are involved at all stages of the policy process. There are currently approximately 1,200 members of the GES, with just under 1,000 working in economist positions at any one time. The mission of the GES is to “make economists better” (ie enhance their skills and recruit and retain good staff) and to “make better use of economics” (ie putting economic analysis to good use in shaping and delivering policy).

3.2 The Head of the Government Economic Service, Sir Nicholas Stern, is supported by Government Chief Economists in 30 departments, who agree the strategic direction of the GES, engage collectively on issues of common interest, sharing experience, analysis and ideas, and fulfil their role as departmental Heads of Profession. They, in turn, are supported by a central management unit, the Economics in Government team (EG).

3.3 EG helps to make economists better by central recruitment of high quality graduates and experienced economists and by ensuring consistent standards in departmental recruitment and compliance with central government initiatives such as Professional Skills for Government. The team also actively supports continuous professional development by issuing guidelines on and monitoring the implementation of economists’ CPD and working with government departments and external providers to ensure high quality and relevant learning interventions.

3.4 The GES helps to make better use of economics through engagement of its Head with Permanent Secretaries and sharing of ideas and experience. It also coordinates the implementation of peer reviews. These are intended to be helpful to departments in dealing with the two important issues—making better use of economics and making economists better. They are designed to provide an analysis based on assessments by fellow Government Chief Economists and other stakeholders, both within the department and beyond, and to suggest actions, which the departmental Chief Economist(s) can then take forward in consultation with their Permanent Secretary and the Head of the GES.

APPENDIX 2

Memorandum from Orange

Orange welcomes the opportunity to comment on the handling of scientific advice, risk and evidence and hopes that the Committee finds our contribution useful. Whilst mobile telephony is not one of the three case studies identified, Orange has considerable experience in respect of many of the policy issues which the Committee is investigating. This is due to the considerable media, public and Parliamentary interest in the perceived health concerns related to mobile phone masts and handsets.

As the terms of the inquiry are very broad, Orange will restrict its comments to the area of “Treatment of risk” and “Transparency, communication and public engagement”, as they are the subjects which impact us most and on which we have the most expertise.

I therefore attach a short paper that discusses the challenges facing policymakers in balancing risk and regulation (Annex). I would particularly like to draw the Committee’s attention to a number of points that relate to the issues that it will consider during its inquiry:

- Orange believes that the treatment and communication of risk is of primary importance to this inquiry and in Government policy and opinion former behaviour. We strongly support the importance of adopting an evidence-based approach, which we believe that the Government has done fairly well in relation to mobile health issues. However, the debate must also consider the

management of risk and how far regulation should try to minimise or remove any potential or perceived risk of harm that might exist. This question should be addressed both within the Committee and more broadly within Parliament and Government.

- Public and media pressure over health scares, from MMR to mobile phone masts, can lead to knee-jerk reactions and inappropriate regulation. The temptation for policy makers is to regulate to address concerns by trying to “manage” the perceived risk. By tightening up on the “causes” of the concern, they might expect to reduce and mitigate the public outcry and relieve the pressure to take further action. Doing what is being asked appears to be the easiest way to satisfy those who are making the demands.
- The “precautionary principle” is interpreted very differently by the media, public and scientific community and is often interpreted by the media and public to mean that any form of unknown risk is unacceptable and must be “regulated away”. Whenever the consensus of established scientific opinion concludes that a particular precautionary measure is justified by scientific research then there should be no question that such measures should be implemented. But whilst imposing a precautionary measure that exceeds the scientifically established guidelines might satisfy some critics, there is no objective and sensible way of determining what measures would be appropriate or effective, as they would not result from scientific analysis. Implementing such a “precautionary” measure, that is not based on scientific evidence, would give official credibility to unsubstantiated perceptions and the Government would be endorsing and thereby actually heightening public concern.
- Orange strongly believes that Government policy should be based on scientific evidence and advice and is therefore satisfied that the Government has taken the lead from the Health Protection Agency (HPA), and its predecessor the NRPB, in developing its policy toward mobile health concerns. It is very important that the primary source for influencing health-related policies comes from the relevant advisory bodies, like the HPA, who are able to take a balanced scientific approach following thorough scientific review.
- Responsibility for addressing these kinds of issues of national importance must always remain with central Government, through the Department of Health. Other policy areas, such as the planning system, should not be used as an artificial or indirect means of addressing risk issues, as this would inevitably dilute the scientific analysis and evidence base and lead to policy confusion and lack of proper foundation.

Of course, there is a dichotomy between public perceptions and behaviour in the area of perceived health concerns that creates a problem for both organisations and politicians. In the field of mobile telephony, operators are under continuous pressure to extend their networks both to broaden coverage and increase capacity, which can create a public perception of a “proliferation” of mobile phone masts across the country. Anti-mast campaigns can be vociferous and often attract the support of local media and politicians. While the campaigns usually focus on health issues, the campaigners themselves are invariably mobile phones users, reflecting the dichotomy facing policy makers.

January 2006

Annex

BALANCING RISK AND REGULATION: A MOBILE PERSPECTIVE

THE DEBATE

1.1 Recently there has been heightened debate in the UK about the management of risk and how far regulation should try to minimise or remove any potential risk of harm that might exist. The debate has been fuelled by several recent, well publicised health scares and “freak” accidents. The use of mobile phones and the erection of phone masts have been mentioned in that context together with scares around Sudan-1 and post-Hatfield rail restrictions.

1.2 Increasingly, politicians, commentators and some areas of the media have been expressing a concern that Government and Parliament could be pressured into attempting to legislate away low-level everyday risks. Government has indicated a concern that through an increasing fear of litigation we are becoming an evermore risk averse society. This has been manifested by some public authorities preventing citizens (and particularly children) from undertaking certain (generally beneficial) activities on the basis that they could conceivably result in harm being caused and therefore legal action being pursued.

1.3 Finding the “correct balance” is something that is central to political life and reflects issues that Parliamentarians from all parties have to tackle on a daily basis.

THE ISSUE

2.1 Public health concern about the use of mobile phones and the erection of masts (and the way in which this is portrayed in the media) is an area which has been identified as posing a problem for how the Government should communicate risk.

2.2 Yet despite the media reporting, the use of mobile technology continues unabated. In the UK, research suggests that about 85% of the population are mobile users and there are now more active subscriptions (61 million) than people, indicating some users have more than one mobile device. Usage also continues to increase (rising by about 10 million minutes per month to 5.14 billion in the year to Q2 2004) and all the predictions are for a continuing rise.

2.3 But these increases in usage belie the perception of possible health risks. Recent MORI research indicated that 51% of people believe that mobile phone masts may cause adverse health effects. However, it also shows that 62% of people say that health concerns do not affect their usage of a mobile phone, with 52% saying that the benefits of a mobile outweigh any potential health risks.

2.4 This dichotomy between public perceptions and behaviour creates a problem for both business and politicians. Operators are under continuous pressure to extend their networks both to broaden coverage and increase capacity, but this creates a public perception of a “proliferation” of mobile phone masts across the country. Anti-mast campaigns can be vociferous and often attract the support of local media. While the campaigns usually focus on health issues, the campaigners themselves are invariably mobile phone users, reflecting the dichotomy facing policy makers.

2.5 The difference in public attitudes towards mobile phone handsets and masts may be explained by an individual’s ability to choose whether to take the “risk” of using a mobile phone, compared to the “imposed risk” of living near a mast. But the reality is that phones cannot work without masts and so similar conflicts between individual interests and wider societal benefits exist as for any system of infrastructure, whether roads, electricity or rail.

STRIKING THE RIGHT BALANCE

3.1 As is generally acknowledged, public and media pressure over health scares can often lead to knee-jerk reactions and inappropriate regulation. The temptation for policy makers is to regulate to address concerns by trying to “manage” the perceived risk. By tightening up on the “causes” of the concern, they might expect to reduce and mitigate the public outcry and relieve the pressure to take further action. Doing what is being asked appears to be the easiest way to satisfy those who are making the demands. The “precautionary principle” is often cited and usually interpreted to mean that any form of unknown risk is unacceptable and must be “regulated away”.

3.2 In relation to phone masts, measures called for by campaigners include establishing exclusion zones between masts and buildings, with increased precaution near schools. They suggest that the permitted strength of radiowave emissions from the masts should be reduced or planning permission refused on grounds that public opposition indicates that the mast is not wanted in the local area.

3.3 In relation to handsets, campaigners’ demands include “tobacco style” health warnings or banning their use by children under a certain age. Again they suggest that the permitted strength of radiowave emissions from the handsets should be reduced or that there should be an obligation to supply them with handsfree kits.

3.4 Whenever the consensus of established scientific opinion concludes that a particular precautionary measure is justified by scientific research, there should be no question that such measures should be implemented. But whilst imposing a precautionary measure that exceeds the scientifically established guidelines might satisfy some critics, it creates other problems. As the precautionary measure would not result from scientific analysis, there is no objective and sensible way of determining what measures would be appropriate or effective. Without a scientific basis any measure would be arbitrary and open to challenges that either it goes too far or not far enough.

3.5 Furthermore, merely by implementing such a “precautionary” measure, the Government would be endorsing and thereby actually heightening public concern, even though there may be no scientific basis for it. It may even simply be raising the bar so that demands for action are made from a different starting point. Logically this could thereby lead to calls for ever more stringent measures creating a vicious circle of increasing regulation, which ultimately would never satisfy those making the demands. This has been clearly evidenced by the stringent regulations placed on mobile operators in Austria and Italy, which have totally failed to satisfy an increasingly concerned public.

WHAT CAN BE DONE IN THE FUTURE?

4.1 There have been many calls for “a real debate about risk” and about how to strike the right balance between risk and regulation. Orange fully supports any debate about the most appropriate way to regulate

in this area. We believe that while these issues may be highly emotive, they must be handled on the basis of scientific evidence and fact. Otherwise policy makers risk creating arbitrary regulations which will not effectively manage risk, but will restrict the services we're able to provide whilst failing to satisfy public concerns.

4.2 As mobile phone usage increases, the regulatory framework has to allow for the expansion of mobile networks to meet consumer demands. Orange is keen to work with Parliament, Government and the media to inform the risk debate as it relates to mobile handsets and masts. Clearly this needs to take place in the context of a wider debate around the role of science in society and the regulatory approach to risk. This debate should help develop new ways to communicate with the public and the media on policy areas in which risks need to be balanced against the impact of regulation.

APPENDIX 3

Memorandum from Professor Nancy Cartwright, London School of Economics and Political Science

SUMMARY

One of the questions posed concerns the mechanisms to ensure that policies are based on evidence. But is equally important to attend to the methods available for using evidence. In particular I shall briefly set out my view that there is a fundamental difficulty present in various methods that policy makers are now being urged to employ to evaluate and use evidence, particularly scientific evidence.

I am a Professor in the London School of Economics Department of Philosophy, Logic and Scientific Method specializing in methodology of both the natural and social sciences. My most recent work concerns the nature of evidence for evidence-based policy. I am not myself ideological about any particular methods—for example I am not a Bayesian, nor an anti-Bayesian; I investigate the advantages and disadvantages of a great variety of methods, both “hard” and “soft”; and I have done special studies from the use of quantum physics to build lasers to evidence for causal connections between health and status.

1. It is widely claimed that evidence can be assessed in terms of certain standard, privileged techniques, such as randomized clinical trials. I believe that the privileging of these procedures as a basis for policy is a serious mistake. On the one hand these procedures are themselves fallible, especially when we have to make inferences from test situations to the real situations in which policy will be implemented. On the other hand, it ignore hosts of other relevant information, much of which we have paid dearly for through research councils and the like, and which, all-told, can point in a different direction from the privileged techniques. All methods require assumptions as inputs and in every case the output conclusion can only be as secure as the input assumptions. For different questions, what matters is to understand which input assumptions for which methods are most secure.

2. The use of evidence ranking systems seems to be spreading fast. I think this is badly misguided. Many of these systems suggest basing decisions on only the top-ranked evidence, if there is any such. But the best decisions are made on the basis of the *total evidence*. This will include a great deal of evidence not rated by most evidence-ranking systems and a great deal that may merit a low rank, which we are thus told to ignore, without consideration of the amount, the source, or the overall pattern. This includes evidence that is merely “suggestive”; results that count as evidence by the hypothetico-deductive method, which methodologists have long touted as the principle method of physics but that is despised by most ranking schemes; derivation from theory; consequences of econometric modelling; and so forth. To the contrary, it is best to look at everything, taking into account how secure each result is and how heavily it weighs for the proposal and also taking into account the overall pattern of the evidence.

3. There is also a movement that suggests that evidence collected by agencies, such as consultancy firms, that know nothing about the subject matter will be better since the agency will have no stake in the results. But it is widely recognized that good studies generally require huge amounts of background knowledge, deployed in subtle ways. There is a related widespread assumption that the goodness of a study can be evaluated through a formal checklist. But there is much work to show that, to the contrary, expertise and implicit knowledge and practices matter tremendously.

4. From a methodological perspective, there are two fundamental unresolved problems we face in using evidence for policy. First, the value of evidence cannot be checked by mechanical procedures. Second, it is wasteful to ignore any evidence—and can lead to disastrous consequences. But there are also no good mechanical procedures for combining evidence of disparate sorts, for seeing how the pieces fit into

a total picture. These are difficult problems that must be dealt with using good sense and intelligence. Trying to substitute flawed mechanical procedures in a drive for “objectivity” or transparency will generally lead to flawed outcomes.

January 2006

APPENDIX 4

Memorandum from the Environment Research Funders’ Forum

INTRODUCTION

1. This submission is made on behalf of the Environment Research Funders’ Forum as a general input to the Select Committee’s Inquiry, rather than in relation to the initial case studies to be addressed. We suggest that a case study on environmental policy making might usefully be considered at a later stage of the Inquiry.

2. The Environment Research Funders’ Forum (ERFF) brings together the UK’s major public sector sponsors of environmental science (Research Councils, Government Departments and their Agencies) to co-ordinate research funding and to address issues of common interest (please see the web-page www.erff.org.uk for further details). A list of members of the Forum is given at Annex 1.

3. The better use of science in environmental policy-making and regulation has been identified as an important area of shared interest. Consequently, ERFF has taken an initiative to identify the key issues that need to be addressed to improve the use of science and to take steps to tackle identified priorities.

THE ERFF REVIEW

4. An initial “baseline review” was carried out to take stock of the use of science in environmental policy-making and regulation in the UK. Interviews were conducted with some 70 people working at the science-policy interface in 35 organisations (including government departments and their agencies, research councils, universities and professional bodies). They are listed at Annex 2 and represent a cross-section through ERFF member organisations, other organisations concerned with the use of science in policy (eg professional bodies and Government agencies), and academia. In addition a literature review was carried out.

5. The review informed a workshop held in June 2005 to consider how the issues can be addressed. Subsequently, the ERFF main board has identified priority areas for further studies leading to recommendations for action to ERFF towards the end of 2006.

6. The interviews and literature review identified six key issues as needing to be addressed as follows:

- the quality of interaction between scientists and policy makers;
- enhancing the framing of questions;
- the overall system for science support to policy and regulation;
- synthesis and communication of science;
- transparency of the science into policy process; and
- roles and mechanisms for the definition of research programmes.

7. The following paragraphs outline the main points made in relation to each of the issues. In asking for views on what needs to be improved, the review risks painting an unduly negative picture: undoubtedly there are many examples across Government of where the science-into-policy process has worked well. A challenge going forward is to ensure that such good practice is adopted more widely.

The quality of interaction between scientists and policy makers

8. The need to enhance the quality of interaction between scientists and policy makers was a point made in different ways by many of the contributors to the review. While that interaction can work well in established areas, for example air quality, it tends to work less well in newer policy areas where relationships between the research and policy communities are less well developed. Differences in motivations, cultures, time-frames and reward structures were identified as obstacles to good communication, with time pressures exacerbating the difficulties.

9. Potential “problems” on the science side were identified as:

- needing to take a broader view, able to take the viewpoint of the policy maker and see how their work fits in;
- recognition of the difference between what is good enough for policy as distinct from publication;
- understanding the role of scientific advisor as explanation, not advocacy;
- understanding what is helpful to the policy maker and naivety about how useful their scientific results are;
- false dichotomy between being a “proper scientist” or a science advisor; and
- recognition that science is just one factor in the policy decision.

10. Similarly on the policy side:

- needing to be more receptive to science: providing more policy pull;
- being scared of evidence: “makes life too complicated” or conflicts with the desired policy line;
- alternatively, being unduly confident in the answer: need to be clearer on what science offers;
- temptation to cherry-pick the results and opinions that back the desired policy line; and
- lack of understanding of science by many career civil servants: under-representation of science in middle and senior ranks.

11. An organisational response favoured by several of the contributors from Government departments and agencies has been to *integrate in-house scientific advisory capacity in policy teams*, resulting in enhanced dialogue and more coherence. However, concerns were expressed about how to ensure that embedded scientists retain their professional knowledge, links with the scientific community and ability to give an independent view. It was suggested that this is less of a problem for social and economic sciences where professional/organisational links are inherently stronger.

Enhancing the framing of questions

12. *Problem formulation was recognised as a key stage.* Several contributors felt that science tends not to be involved early enough in establishing policy priorities. Systematic analysis of environmental pressures and the realisation of the potential of current horizon scanning initiatives, as reflected for example in the Defra programme, should enable science to better inform the policy agenda. Science should be tuned into the “front wave of the environmental debate” and provide a creative stimulus to policy formulation. It should also be more engaged with establishing the government’s bigger strategic questions, typically originating in Treasury or the Cabinet Office.

13. *Policy makers can sometimes have difficulty in posing questions for science* that will effectively inform choices between policy options. Their questions tend not to be sufficiently broad and to be too short-term. Constraining assumptions may not be apparent, for example associated with the scientific or decision model, or (as several contributors indicated) due to the dominance of economics in departments’ thinking which may screen out broader considerations.

14. *Effective public engagement at the framing stage was identified as important but difficult* on sensitive issues. Deliberative and inclusive approaches have been promoted (for example in the 21st report of the Royal Commission for Environmental Pollution) but have not yet been widely adopted, and require further development to be effective within resource and time constraints. One contributor indicated that there is a lack of understanding of what is at stake in many public controversies, in particular the public’s assumptions, values and concerns.

The overall system for science support to policy and regulation

15. Policy making is recognised as a complex process typically involving many players and influences. It was suggested that we need to develop methodologies to map and understand the policy process for any particular situation in order to inform the development of strategies to ensure science’s effective contribution.

16. At the strategic level at which ERFF might contribute, thought should be given to *how the UK ensures that it has a “healthy” system for science input to policy*, in terms for example of accessibility of expertise, diversity of inputs, productive dialogue, etc. One contributor pointed to the dismantling of the advisory system as constituted in governmental research institutes in the 80’s and 90’s and the consequent fragmented and unproductively competitive system that exists today. Specific issues raised under the “system” heading are summarised in the following paragraphs.

17. The *importance of policy initiatives at the European level* was stressed together with the need for organisations within the ERFF umbrella to work effectively together in providing scientific input to the policy formulation process.

18. Several contributors pointed to the need to *improve engagement between Government departments and their non-departmental public bodies (NDPB's) and with the research institutes that they support*. There was a feeling that there is valuable knowledge that is not making its way through to the policy process, but also concerns that NDPB's and research institutes can write things in a way which is insensitive to the policy context. On this latter point the challenge is how to ensure independence while not being naive.

19. Meetings with professional bodies, the Royal Society and Wellcome Trust pointed to *the important, but not always realised, contribution of professional bodies, learned societies and charities* as independent sources of advice resting on access to broadly based and in-depth expertise. Each indicated that they have strategies in place to be more influential in the policy making arena.

20. Contributors from a number of government departments and NDPB's expressed concerns, exacerbated by current initiatives to "slim down", about having *sufficient in-house capacity to interact with other bodies and to act as intelligent customers for science*. Translating research outputs to effective advice to policy and drilling down to evaluate the quality of evidence were identified as key but under-resourced activities. Maintaining capacity in the research base was also highlighted as an issue particularly as Departments become more focused in their research programmes.

21. The *lack of incentives for researchers to engage with the policy process* was mentioned frequently, the Research Assessment Exercise topping the list of negative influences. Appropriate credit needs to flow from sitting on advisory committees and carrying out secondary research to synthesise and summarise others' research findings. Better funding from policy making bodies needs to be put in place to support policy engagement activities.

22. *Measuring impact and uptake was identified as important but difficult*. Within departments and agencies quality assurance and evaluation systems can have too narrow a focus, and need to be extended to the full science-into-policy process, including the question formulation and policy uptake stages.

Synthesis and communication of science

23. The *translational role from research to scientific advice was identified as key*. Concerns were expressed that the necessary competencies are in short supply (and indeed are ill-defined) and that staff within government departments and agencies may focus too much on managing R&D programmes at the expense of their translator role. It was recognised that translation happens both in-house and in the research community and that there is a case for strengthening both in order to reduce the research-policy gap.

24. *A particular challenge relates to the need to reflect uncertainty and differences of opinion in advice to policy*. Returning to the first issue described above, there is a need for an enlightened view shared between policy makers and scientists of the provisional nature of science. The problem is particularly acute when there are high levels of uncertainty about both consequences and their probability. In these circumstances, academic input has pointed to the need for "plural and conditional" advice, but practice in this area is at an early stage of development and can run counter to expectations of a more definitive input from science. A further concern is how different kinds of knowledge—lay/local and expert—can be incorporated in scientific advice.

25. *Systematic reviews* were identified as of increasing importance as a means of accessing the full breadth of relevant information and avoiding the biasing of policy by selective incorporation of a limited set of research outcomes. The current initiative at Birmingham University to carry out systematic reviews on nature conservation issues was identified as a positive development. However, the extension of synthesis methodologies originating in the health area to less well-constrained environmental issues was recognised as difficult. Also, research useful in a rigorous research context can prove to be in short supply, people with the skills to do synthesis are thin on the ground, and the planning and management of synthesis projects to give outputs useful to policy is challenging.

26. More generally a need was identified for *better knowledge management tools* to enable better policy access to potentially substantial volumes of research material.

Transparency of the science into policy process

27. Behind the issue of transparency lies a concern expressed by several contributors that *the science-into-policy process must engender trust*—seen as increasingly important in a society that is more questioning and where everything is open to challenge. Transparency of the evidence base and its use was seen to be essential to successful partnerships in policy advocacy. Transparency was considered to include involvement of stakeholders from the research stage onwards as a prerequisite of buy-in and consensus.

28. Several contributors in government departments and agencies pointed to the need to *establish clearer "audit trails" to record how science is used in policy making*. While progress has been made on making available research reports, the working of advisory committees etc, explanation of how a policy decision

rests on the evidence remains rather patchy. The Freedom of Information Act was expected to be a driver towards a more systematic approach to recording the science into policy process but may make interactions more guarded, particularly between government departments and external bodies.

29. A need to employ structured decision making processes was expressed by one contributor. By making explicit, and allowing deliberation on, “facts” and “values” the impact of science should be enhanced.

Roles and mechanisms for the definition of research programmes

30. Concerns were expressed about current tensions between the research programmes of ERFF members. There was *strong support for better co-ordination* such that members could rely on others “doing their bit” and to overcome a tendency to discount research funded by others.

31. Some research communities tend to see *excellence and usefulness as conflicting requirements* (others don’t!). This needs to be worked through, including sharper delineations between research with different motivations and better mechanisms to ensure policy uptake if that is the motivation. Research Councils recognise the need to increase their awareness of specific science needs for policy-making, and the need to ensure that relevant staff properly understand the policy-making process.

32. It was felt that there is scope to *improve the usefulness to policy making of the directed or managed programmes of the Research Councils*. There are some good examples though (some pointed to EPSRC’s Sustainable Urban Environment and Flood Risk Management programmes)—good practices need to be captured and promulgated across the Research Councils.

33. Current procurement and programme planning approaches can mean that researchers are reluctant to share their ideas at the problem formulation stage. Mechanisms need to be developed to enable a *free exchange of ideas* without fear of losing out at the project/contractor selection stage.

NEXT STEPS

34. The baseline review informed a workshop held in June 2005, and involving 50 people from the research and policy communities, to consider how the issues could be addressed (the workshop report is available at: <http://www.erff.org.uk/reports/events.asp>). Subsequently ERFF has identified three priority areas that will be addressed in 2006:

- the processes of translation and interpretation from research results to inputs which are useful to policy-making and regulation;
- the training needs of the “next generation” of researchers so that they are better able to interact with the policy-making process; and
- the planning and management of the directed programmes of the research councils to enable them to make a greater contribution to policy-making.

CONCLUSION

35. ERFF member organisations recognise the key role that science must play in environmental policy-making and regulation, and have made significant progress already in ensuring that role is fulfilled. Nonetheless, the review has revealed that there remain significant issues that need to be addressed as follows:

- the quality of interaction between scientists and policy makers;
- enhancing the framing of questions;
- the overall system for science support to policy and regulation;
- synthesis and communication of science;
- transparency of the science into policy process; and
- roles and mechanisms for the definition of research programmes.

The priority issues are being tackled by ERFF’s on-going programme.

36. We hope that this summary of the ERFF initiative will provide helpful background information to the Select Committee in its forthcoming Inquiry.

January 2006

Annex 1

ERFF MAIN MEMBERS

Defra (Howard Dalton Chair)
Natural Environment Research Council
Environment Agency

Scottish Environment Protection Agency
 Department for Transport
 Department for International Development
 Met Office
 Economic and Social Research Council
 Scottish Executive
 Medical Research Council
 Engineering and Physical Sciences Research Council
 Biotechnology and Biological Sciences Research Council

Annex 2

CONTRIBUTORS TO THE BASELINE REVIEW

GOVERNMENT DEPARTMENTS AND AGENCIES

- Department for Environment, Food and Rural Affairs (Defra): John Rea, Arwyn Davies, Peter Costigan, Michael Harrison, Steven Hill.
- Department of Health: Jonathan Bickley.
- Department for International Development (DFID): Gareth Martin, Dylan Winder, Peter O'Neill, Simon Anderson, Fiona Power, Abigail Mulhall, Val Snewin, Andrew Long.
- Department for Transport: Robert Sullivan.
- English Nature: Keith Duff.
- Environment Agency: Jim Wharfe, Dave Palmer, Peter Madden, Bob Harris, Helen Wakeham, Steve Killeen.
- Food Standards Agency: Alisdair Wotherspoon.
- Forestry Commission: Steve Gregory.
- Health and Safety Executive (HSE): Paul Davies, John McGuinness.
- Joint Nature Conservation Committee (JNCC): Richard Ferris.
- Met Office: Dave Griggs.
- Office of Science and Technology (OST): Sir Keith O'Nions, Michelle Frew, Jonathan Spencer.
- Office of the Deputy Prime Minister (ODPM): David Fisk.
- Scottish Executive, Environment and Rural Affairs Department (SEERAD): Mike Foulis, Ian Bainbridge, Bob Irvine, Nick Ambrose, Helen Jones, Linda Pooley.
- Scottish Environmental Protection Agency (SEPA): Chris Spray, Colin Bayes, James Curran, Caspian Richards.
- Welsh Assembly: Havard Prosser.

RESEARCH COUNCILS

- Economic and Social Research Council (ESRC): David Guy, Gary Grubb.
- Engineering and Physical Science Research Council (EPSRC): Peter Hedges, Alison Wall.
- Natural Environment Research Council (NERC): Faith Culshaw.

UNIVERSITIES AND RESEARCH INSTITUTES

- Brunel University: Fred Steward.
- Centre for Ecology and Hydrology (CEH): Pat Nuttall, Ann Calver, John Gash, Graham Leeks.
- Cranfield University: Simon Pollard, Dick Thompson.
- Imperial College / UK Energy Research Centre: Jim Skea.
- London School of Economics: Larry Phillips.
- Macaulay Institute: Dick Birnie.
- Newcastle University / RELU: Philip Lowe.
- Royal Holloway College: Ed Maltby.
- Sussex University (SPRU): Andy Stirling, Alister Scott.
- University College, London: John Murlis.

OTHER

- British Ecological Society: Nick Dusic.
- DEMOS: James Wilsden.
- Institution of Electrical Engineers: Nicholas Moiseiwitsch.
- Overseas Development Institute: John Young.
- Royal Society: Peter Collins.
- Sustainable Development Research Network: Malcolm Eames.
- Welcome Trust: David Lynn.

APPENDIX 5

Memorandum from The Royal Society

SUMMARY OF KEY POINTS

- Where departmental Chief Scientific Advisers have been appointed at a senior level from outside Government this has led to an improvement in the use of science across Departments and has assisted in the development of a clear strategy for science.
- We are aware that the House of Commons Science & Technology Select Committee is seeking ideas for case studies for the management of cross-departmental science advice. We suggest that the Select Committee investigates the key issues of energy supply and climate change as future case studies.
- For nearly all the critical decisions facing Government, the evidence base is often not as large as one would like. In such cases a judgement has to be taken about whether further research should be commissioned before a decision is taken, or if decisions should be made based on the available knowledge. As the case of climate change demonstrates, incomplete evidence should not be used as an excuse for inaction.

1. The Royal Society welcomes the opportunity to submit evidence to the House of Commons Science and Technology Select Committee inquiry on scientific advice, risk and evidence.²⁹ This submission has been approved by Professor David Read FRS, Vice President and Biological Secretary, on behalf of the Council of the Royal Society.

2. In this submission the Society responds generally to the questions raised by the Committee, which are used as headings throughout this document. Responses are not to the case studies. The response draws many examples from the work of the Department for Environment Food and Rural Affairs (Defra). This is not necessarily because it is a poor example of the use of science by Government but because the Society looked in detail at this Department when producing its submission to the Office for Science and Technology's consultation on the use of science by Defra (Royal Society 2005a).

SOURCES AND HANDLING OF ADVICE

What impact are departmental Chief Scientific Advisers having on the policy making process?

3. Where departmental Chief Scientific Advisers (CSAs) have been appointed at a senior level from outside Government this has led to an improvement in the use of science across Departments and has assisted in the development of a clear strategy for science. However, it is vital that the CSA is involved in all the key strategic decisions within a Department.

What is the role of the Government Chief Scientific Adviser in the policy making process and what impact has he made to date?

4. The cross-departmental overview is a vital aspect of Sir David King's role. His work to bring together the departmental CSAs and raise the profile of key cross-departmental issues (such as climate change and energy) has had positive impacts. He also brought together key individuals from different Departments during the 2001 foot and mouth outbreak with positive results.

²⁹ The terms of reference for the Select Committee inquiry can be found online at http://www.parliament.uk/parliamentary_committees/science_and_technology_committee/sag.cfm

5. Sir David has also made a number of positive impacts on the policy making process to date. He instigated the current review of the CSA's guidelines on scientific analysis in policy making, to which the Society responded (Royal Society 2005b). The review of these guidelines aims to further enhance the ability of Government policy makers to make better decisions. He was also responsible for the introduction of OST's programme of science reviews of Government Departments that was announced in June 2003.

Are existing advisory bodies being used in a satisfactory manner?

6. We suggest that Government Departments' access to independent advice in science and engineering should be based on having a panel (and in some cases panels) of independent experts available to each Department to support their use of science. We welcome the fact that Defra has already established a Science Advisory Council (SAC) with a membership of highly experienced individuals.

7. To be effective, these advisory committees should be involved in all major policy issues involving scientific evidence and include a number of internationally recognised scientists (covering an appropriate range of disciplines) in addition to other stakeholders. External advice about the membership of such committees should be sought from learned societies and appropriate professional bodies. The chairperson should have access to ministers when appropriate.

8. The advisory committees can act as a nucleus for pulling together expert *ad hoc* groups to address particular issues. Their roles might involve:

- setting or advising on the scientific questions which experts will be asked to address;
- participating in stakeholder and public dialogue activities;
- ensuring that evidence being used by the Department is adequately peer reviewed;
- ensuring the best advice is available when considering breaking news and identifying appropriate reviewers;
- identifying the need to replicate work where questions exist regarding validity of evidence;
- playing a role in evaluating departmental use of the guidelines.

Are Government Departments establishing the right balance between maintaining an in-house scientific capability and accessing external advice?

9. We recognise the potentially conflicting demands (given limited resources) of ensuring continued capacity in particular science areas, while having the flexibility to allocate funding to tackle urgent problems. For example, Defra has been successful in helping to build capacity in the environmental sciences and has created centres of excellence in universities and agencies such as the Met Office. However in some areas Defra tends to utilise mainly well-trusted long-established relationships with certain research centres and research groups. A broader engagement with the wider research community would be beneficial in terms of increasing the number and breadth of people engaged in policy-relevant research. Important external sources of advice include learned societies, professional bodies, Research Councils, and universities.

10. Reciprocal exchanges between scientists and policy makers (including those without a scientific background) can play an important role in developing expertise within both the Department and the wider community. Although not a reciprocal arrangement, one of our research fellows spent time in Defra's Europe Environment Division which was beneficial to both the Department and the research fellow. Defra-sponsored postdoctoral fellowships could also play a role in building capacity in key areas.

11. One of the specific situations that has given the Royal Society, the House of Lords (House of Lords 2004) and others cause for concern in the context of ensuring that the appropriate blend of expertise is achieved is the low level of scientific representation on Defra's Committee on Radioactive Waste Management (CoRWM). Defra failed to establish a committee with adequate scientific and technical expertise to provide the best policy advice. We welcome the fact that the CSA agreed to examine the provision of scientific advice to CoRWM and has introduced peer review and quality assurance into its decision making process (Royal Society 2006).

RELATIONSHIP BETWEEN SCIENTIFIC ADVICE AND POLICY DEVELOPMENT

What mechanisms are in place to ensure that policies are based on available evidence?

12. We believe that this is an area where improvement is required and we welcome the fact that at least one Department has taken steps to address this. Thus Defra's new evidence-based policy making project was initiated with the aim of ensuring that its policies are based on a comprehensive and foresighted understanding of the evidence (Defra 2005a).

13. The review by Godfray *et al* (2004) of the randomised badger culling trial and associated epidemiological research also raised concerns about the link between scientific evidence and policy formulation by Defra and the scientific input from its Independent Steering Group. The review recommended that:

- processes be put in place to ensure that in future there is better communication between Defra policy units and groups responsible for managing policy-relevant science projects
- a senior figure with a scientific background takes ownership of large science-based projects

14. In order that Departments are able to gather all the available evidence they should access advice from a sufficiently wide range of the best expert sources, both within and outside Government. As indicated in the previous section important external sources of advice include learned societies, professional bodies, Research Councils, and universities. Departments should also have advisory panels of independent experts. In many cases it will be appropriate to use experts from outside the UK, not only where there is a lack of expertise in the UK, but when an international perspective would be beneficial. Organisations such as the learned societies can provide a useful access to international experts.

15. When obtaining specialist advice from experts, it is not the diversity of opinion that should be balanced, but the weight of opinion accorded to the various strands of scientific advice within that diversity. In the name of “balance”, the media invariably present opposing views on each side of an argument, regardless of the relative weight of support for those opinions. Departments should ensure that their selection of advisors matches the nature of the issue and that the breadth of judgement required is sufficiently wide to reflect the diversity of opinion amongst experts in a balanced way.

16. An important part of ensuring quality and relevance in their sources of advice involves making certain that the correct terms of reference for the research are established at the outset. This is particularly important where the outcomes are likely to feed directly into policy decisions. The Society was involved in the quality assurance review of a report on health and environmental effects of waste management options commissioned by Defra. We found that the failure to frame the study in the context of a life cycle analysis prevented a complete comparison of the waste management options and reduced the value of the report to policy makers (Royal Society 2003b). Some form of expert review of the original terms of reference might have avoided this situation.

Are Departments engaging effectively in horizon scanning activities and how are these influencing policy?

17. For horizon-scanning exercises to be effective it is important that the key people participate. The key people may not always be those that traditionally engage with Government Departments, for example the most appropriate individuals may be international experts in a particular field but not in receipt of research funding from the Department. Departments should have a strategy in place to identify and engage with these people. In terms of ensuring future participation in these types of exercises it is important that the use made of the information received is clearly communicated.

18. It is important to ensure that the questions asked are not too narrow and that appropriate experts with a breadth of judgement are selected. It is important to have mechanisms in place for early identification of multi-disciplinary issues which cut across Government Departments or that have an international dimension.

19. Many Government Departments undertake horizon scanning activities and we trust that they will evaluate the effectiveness of these processes. We hope individual Departments’ horizon scanning will inform the work of OST’s new horizon-scanning centre. It is important that Departmental scientific advisory committees are involved with any horizon scanning exercises that their Departments undertake.

20. The report published by the Society with the Royal Academy of Engineering on nanotechnology in 2004 (Royal Society–Royal Academy of Engineering 2004) highlighted the value of identifying as early as possible new areas of science and technology that have the potential to impact strongly on society. We identified the need to bring together representatives of a wide range of stakeholders to review new and emerging technologies, to identify at the earliest possible stage areas where issues needing Government attention may arise, and to advise on how these might be addressed. We recommended that the work of this group should be made public and that all stakeholders should be encouraged to engage with the emerging issues. We hope that these recommendations will be fully implemented by OST’s new horizon scanning centre and by the other relevant Government Departments’ horizon scanning activities.

Is Government managing scientific advice on cross-departmental issues effectively?

21. Many issues likely to require scientific evidence cut across Departments and will therefore require close communication and collaboration between Departments. It is not clear that the Government is dealing effectively with the scientific advice on the key cross-departmental issues of energy and climate change. We are aware that the House of Commons Science & Technology Select Committee is seeking ideas for case studies for the management of cross-departmental science advice. We suggest that the Select Committee investigates the key issues of energy supply and climate change as future case studies.

22. We recommend that OST establishes issue-based reviews of the use of science advice in cross-departmental matters in a similar fashion to its departmental reviews. However, we acknowledge that resource constraints may make it difficult for OST to conduct its ongoing programme of departmental reviews concurrently with reviews which are issue-based.

23. Nanotechnology is a policy area in which there has been unprecedented collaboration between Government Departments. The Government published its response to the joint Royal Society–Royal Academy of Engineering report *Nanoscience and nanotechnologies: opportunities and uncertainties* in February 2005 (HM Government 2005a). The actions outlined in the response are being coordinated by the Nanotechnology Issues Dialogue Group (NIDG), which includes representatives from the Departments and Agencies involved in implementing the response, and is chaired by the Office of Science and Technology.

24. A number of other groups feed into the NIDG, including the Nanotechnology Research Coordination Group (NRCG), another cross-departmental group, chaired by Defra. The NRCG's role is to coordinate publicly funded research into the potential risks presented by the applications of nanotechnologies, to provide a basis for developing an appropriate regulatory framework. The group recently published its first research report *Characterising the potential risks posed by nanoparticles* (HM Government 2005b), which describes priorities for future research based on technical reports commissioned from external expert sources. The report also provides information on relevant activities across Government Departments, agencies and the research councils and its production in itself is a valuable example of joined up thinking.

25. The Government's coordination of policy activities surrounding nanotechnologies appears to be a good example of the Government dealing effectively with the scientific advice on a cross departmental issue. However, we trust that the Council of Science and Technology's two year review of the Government progress, to report in 2007 will evaluate the level of effectiveness achieved in these coordinating activities in detail.

TREATMENT OF RISK

Is risk being analysed in a consistent and appropriate manner across Government?

26. Risk assessment is an important part of decision making. Rapidly developing scientific knowledge should not be confused with a corresponding increase in scientific certainty: uncertainties in the science must be identified. There may be some benefit from a wider adoption of some of the formalised techniques that are available for eliciting expert opinion, especially when dealing with issues involving quantifiable scientific evidence. We dealt with some of these issues in our recent report on detecting and decontaminating chemical and biological agents (Royal Society 2004). The objective of these techniques is to arrive at a "rational consensus" given all the evidence and opinions available; not necessarily an absolute consensus, which is likely to be impossible to achieve in most cases.

27. For nearly all the critical decisions facing Government, the evidence base is often not as large as one would like. In such cases a judgement has to be taken about whether further research should be commissioned before a decision is taken, or if decisions should be made based on the available knowledge. As the case of climate change demonstrates, incomplete evidence should not be used as an excuse for inaction. Once again independent advisory committees can provide guidance on this issue.

Has the precautionary principle been adequately defined and is it being applied consistently and appropriately across Government?

28. The precautionary principle has several conflicting definitions (POST 2004), which makes it difficult to assess whether it has been applied consistently and appropriately across Government. The Interdepartmental Liaison Group on Risk Assessment (ILGRA), an informal committee of senior UK policy makers, noted that the UK Government is committed to using the precautionary principle as it is defined in the 1992 Rio Declaration on Environment and Development (ILGRA 2002) in preventing environmental degradation.

29. It has been suggested that the precautionary principle should be applied in a wide variety of situations. For example, the Society stressed the need to act in a precautionary manner in relation to endocrine disrupting chemicals (Royal Society 2000), marine fishery reserves (Royal Society 2003a) and in the regulation of nanoparticles (Royal Society–Royal Academy of Engineering 2004). It is clear that the question of how and when the precautionary principle should be applied needs to be determined on a case by case basis.

30. For example, the Government has agreed to help industry to reduce or remove nanoparticles and nanotubes from waste streams and support research to overcome the technological challenges of doing this. It has also agreed "to work with industry to prevent the deliberate release of manufactured nanoparticles for environmental remediation until there is sufficient evidence that the benefits outweigh any adverse effects" (HM Government 2005a). In this case, the Government has adopted a precautionary

approach. However, since it is too soon to say whether this application of the precautionary principle by the Government has achieved its objectives, the Select Committee might like to revisit this case at a later date.

How does the media treatment of risk issues impact on the Government approach?

31. The media can have a major impact on public reaction to risks, particularly those that are newly emerging or newly recognised. The Government approach to risk issues needs to take account of the importance of communication through the media, not only to alert a large number of people quickly to new risks, but also for the purpose of informing them of measures to manage the risks.

32. The news media tend to give greatest prominence to new risks, or changes in existing risk, which can affect public perceptions and behaviour. This may make it difficult to manage communications about larger existing threats. For instance, evidence of a small but previously unrecognised side-effect of a preventative medicine, such as a vaccine, may be given greater prominence than the already known greater threat to health posed by the disease the medicine is intended to prevent. It is important that approaches to risk are not based solely what is given the greatest media coverage.

33. There are numerous examples of the problems that can occur in communication through the media. In many cases these problems occur because only incomplete information about a new risk can be disseminated, without supporting information about the size of the risk or how the risk should be managed. On the other hand, withholding information about a risk until all associated details are available may prevent individuals affected from taking their own steps to manage the risk.

34. Particular problems may be associated when new risks or changes in risk are described solely in relative terms. For instance, information that the risk of a disease occurring is now 2 in 1,000,000 instead of 1 in 1,000,000 could be conveyed as a 100% increase in risk. There may sometimes be a temptation to give greater prominence to relatively large changes in risk, rather than in terms of much smaller absolute risks, because they are perceived to have greater “news value”. This applies to both journalists and to the “experts” who are the source of the information. It is essential that absolute risks are conveyed as well as relative changes in risk.

35. Problems can occur when there is a dispute between experts over the size of a risk or of the number of people who are exposed to it. In such cases, journalists may find it difficult to choose between conflicting claims. Experience suggests that in such cases, official reassurances from Government Departments and agencies or other perceived “Establishment bodies” may not be regarded as more reliable. In some cases, journalists will have more faith in the opinions of individual experts, particularly if they are perceived to be independent of any potential vested interests, than in official statements by press officers, civil servants or even Ministers. Further complications can occur if a particular risk becomes the focus of a campaign.

36. “Breaking news” in the scientific domain should also be subject to an evaluation by independent experts. The first response to breaking news, if truly ground breaking, should be immediate acknowledgement, accompanied by a clear statement that a full account of the research is not available and/or that there is no evidence of independent review, with a commitment to rectify this situation and to seek further opinions as soon as possible. It is important to explain the uncertainty or lack of corroboration. In these cases it will be important to have a mechanism for rapid peer review. Learned societies and Research Councils can be approached as a source of peer reviewers that can provide a rapid response. If necessary, and if of sufficient importance, a dialogue with the authors of the breaking news and access to the detailed evidence should be sought as part of the evaluation by independent experts.

TRANSPARENCY, COMMUNICATION AND PUBLIC ENGAGEMENT

Is there sufficient transparency in the process by which scientific advice is incorporated into policy development?

37. Publication and transparency are vital as third parties must be able to access data and, if appropriate, come forward with alternative interpretations. Therefore, Departments need to have clear policies on data availability. Consequently, we welcome the Defra accessibility commitment and the publication scheme (Defra 2005b & c) that sets out such a policy.

38. The Freedom of Information Act 2000 coming into force on 1 January 2005 has meant that a number of Government Departments have updated their publications schemes (such as the Department of Trade & Industry 2002, Foreign & Commonwealth Office 2005, and Home Office 2005), which we also welcome. These publication schemes specify the types of information the Department publishes, the manner in which the information is published and whether the material is available free of charge or on payment of a fee. However, we would recommend that Departments’ publication schemes are freely available on their websites, which is not currently the case for all Government Departments such as DTI.

Is publicly-funded research informing policy development being published?

39. We note that it is important to publish publicly-funded research that informs policy development. For example, Defra facilitates the sharing, transfer and management of knowledge through its open publication policy. The Defra Science and Research Projects database lists the work it is funding and in many cases contains links to reports or summaries of the research. The scientific work of the five Defra science agencies is debated in the scientific literature.

Is scientific advice being communicated effectively to the public?

40. We acknowledge that communicating complex scientific advice to the wider public is a difficult process, particularly on sensitive subjects such as health-related issues. To increase effectiveness, it is important to view communication within the context of the broader science advice process. Three main issues are commonly highlighted. The first concerns how the issues that experts are asked to address are framed, particularly to ensure they are cognisant of public concerns. The second relates to the question of how the assessment and advice processes mutually inform each other, particularly to ensure that debate helps to shape the assessment and the assessment informs debate. The third concerns uncertainty, which needs to be meaningfully represented and communicated in the scientific advice.

41. We would welcome the Committee exploring the extent to which these concerns are taken into account by Departments in the development of their advice processes.

EVALUATION AND FOLLOW-UP

Are peer review and other quality assurance mechanisms working well?

42. The effective use of independent peer review is a vital part of ensuring the quality of the work that Government Departments sponsor. For example, we welcome the recent establishment by the Defra CSA of the Science Quality and Priorities Team, which is playing a key role in developing quality assessment within Defra. We can find no evidence that this approach is being taken in other Departments. Departmental scientific advisory committees have a quality assessment role and they should ensure that the findings of quality reviews (eg of programmes) feed into decisions about future funding. Peer review also has an important role in identifying gaps and opportunities for further research.

43. While it is important to include wider stakeholder groups in establishing priorities (and in many cases the terms of reference for research), this should not compromise the scientific peer review, which should involve the leading experts in the field, including international experts where appropriate.

What steps are taken to re-evaluate the evidence base after the implementation of policy?

44. It is important to re-evaluate the evidence base after the implementation of policy to take into account any developments in the related science. The need for such re-evaluation is particularly great in cases where the original decision was based on incomplete evidence. This can be carried out as part of a policy review undertaken (or commissioned) by the relevant Department(s). Policy reviews should be based on, or informed by, the most up-to-date statement of scientific opinion. External organisations such as the learned societies can be approached to contribute to such reviews, which will normally need to access both national and international expertise.

January 2006

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APPENDIX 6

Memorandum from the British Psychological Society

I am writing in my capacity as the Chair of the Research Board of the British Psychological Society.

The Society welcomes the above inquiry into the use of scientific advice (including the social sciences) and the way in which the guidelines governing the use of such advice is being applied in practice across Government.

We believe that psychology has contributed a great deal to the understanding of the public's perceptions of risk and the perceptions of expert evidence. In particular, we would like to draw the Select Committee's attention to a report written by Professor Richard Eiser at the request of the OST for Foresight on the *Public Perception of Risk* (2004). This report was written on the basis of psychological theories of attitudes, decision making, learning and social influence, and outlined that perceptions of risk are based on both implicit and explicit assessments of the costs and benefits of certain actions. That is, people use both intuitive, often rather automatic or unconscious inferences, and they use more rule-based formal ways to judge risk. However, with both types of judgment, people are very prone to biases that mean they do not appreciate the objective levels of risk. Such judgements are made on the basis of both experience and information that is provided by others. Importantly, the report outlined the role of science in providing information on uncertainty and choice, and the consequences of withholding "expert" information. A copy of the report and its summary is attached for your reference.

We believe that an evidence-based approach to policy making is entirely appropriate and necessary. We also recognise and endorse the need to ensure consistency in practice across government. Science has a fundamental role in informing the both the development of policy, as well as the way such evidence is used in policy making (ie the mechanisms through which it is obtained and evaluated). However, Government must also be minded of the public's perception (trust/distrust) of both science and scientists, and the importance of ensuring that information is provided in a transparent and accessible form. In particular, we recommend that Government should attend to the way in which risk information is compiled and communicated. These two aspects are relevant regardless of whether information relates to risk at the level of organisations, at the level of individuals (eg in relation to choices about medical treatment options), it is important to provide proper guidance on the ways in which risk can be miscalculated or inferred on the basis of erroneous assumptions. There is a substantial psychological evidence base that can make a very important contribution to ensuring that risk is (a) properly calculated and (b) properly communicated. We urge that scientific statements regarding risk should that evidence into account. Of course, the quality of evidence used to calculate risks is also of paramount importance;

as to develop policy on the basis of little evidence could be not only misguided (as the potentially unknown consequences could be far reaching) but in addition, (and perhaps more importantly) damaging to both Government and to the reputation and perception of science (and scientists).

January 2006

APPENDIX 7

Memorandum from Biosciences Federation³⁰

SOURCES AND HANDLING OF ADVICE

1. The recently updated OST guidelines provide an excellent framework for the use of scientific expertise in formulating public policy. The guidelines recommend that Departments develop more direct links with learned societies as a means of broadening the range of the evidence base. We hope to see more evidence of this in the future.

2. The installation of departmental Chief Scientific Advisers has seen a major improvement in the quality of scientific input into the decision-making process. However, we strongly support detailed evaluation of departmental policy procedures under OST Science and Innovation Strategy Assessments. OST should examine significant policy documents of each Department to ensure adherence to the guidelines and to assess the breadth, quality and evaluation of the evidence that is being used to shape policy.

3. Good policy making depends on a strong scientific culture within Departments. Departments must ensure that they employ well-qualified scientific staff, and that these staff maintain and extend their competencies and their awareness of current scientific issues. Defra in particular is failing to maintain a high class of scientific expertise and there is a danger that policy is driven by popular opinion rather than scientific evidence.

4. The Defra example raises another concern that is specific for those areas of Government that commission research. Defra commissions research primarily to support and inform policy. Thus, such research will inevitably reflect the interests of the current policy staff. Although some of these staff have scientific qualifications they often do not possess the depth of knowledge and expertise necessary for horizon scanning and strategic planning. In such a highly sensitive area as agriculture and food, where the public have many concerns, it is essential that both the commissioning of research and its evaluation are conducted in an exemplary and transparent manner.

RELATIONSHIP BETWEEN SCIENTIFIC ADVICE AND POLICY DEVELOPMENT

5. The relationship between scientific advice and policy development must be made more transparent. The Home Office took no advice from scientific experts before formulating Clause 21 of the Drugs Bill 2005 which makes it illegal to possess fresh psilocybe or "magic" mushrooms as well as in the prepared state. Suggestions of establishing a working party to formulate tenable definitions of "fresh", "prepared", "produce" and "product" were ignored by the Home Office. The statutory instruments, defining how the new law will work in practice, were not available for parliamentary scrutiny or any external consultation before the Bill was passed.

6. The recent intervention by the Secretary of State for Health, Patricia Hewitt, on the use of Herceptin as a treatment for early stage breast cancer was a striking example of a "knee-jerk" reaction to the findings of preliminary scientific studies. This intervention at ministerial level represents a substantial deviation from the procedures set up to recommend therapies for use in the NHS.

7. Where new evidence has a radical impact on existing bodies of evidence, it is essential that this evidence is shared with, and replication sought by, experts in the relevant knowledge base. Changes in policy should only occur after thorough consideration of all the evidence and a detailed risk assessment.

OPENNESS

8. The Biosciences Federation is pleased for this response to be publicly available and will be shortly placing a version on www.bsf.ac.uk.³¹

January 2006

³⁰ The Biosciences Federation was founded in 2002 in order to create a single authority within the life sciences that decision-makers are able to consult for opinion and information to assist the formulation of public policy. It brings together the strengths of 38 member organisations, including the Institute of Biology, which represents 45 additional affiliated societies (see Annex). The organisations that have already joined the Biosciences Federation represent a cumulative membership of some 65,000 bioscientists and cover the whole spectrum from physiology and neuroscience, biochemistry and microbiology to ecology and agriculture. The Biosciences Federation is a registered charity (no 1103894).

³¹ www.bsf.ac.uk/responses/sciadvce.pdf

MEMBER SOCIETIES OF THE BIOSCIENCES FEDERATION

Association for the Study of Animal Behaviour	Experimental Psychology Society
Biochemical Society	Genetics Society
British Andrology Society	Heads of University Biological Sciences
British Association for Psychopharmacology	Heads of University Centres for Biomedical Science
British Biophysical Society	Institute of Animal Technology
British Ecological Society	Institute of Biology
British Lichen Society	Institute of Horticulture
British Mycological Society	Laboratory Animal Science Association
British Neuroscience Association	Linnean Society
British Pharmacological Society	Nutrition Society
British Phycological Society	Physiological Society
British Society of Animal Science	Royal Microscopical Society
British Society for Cell Biology	Society for Applied Microbiology
British Society for Developmental Biology	Society for Endocrinology
British Society for Immunology	Society for Experimental Biology
British Society for Medical Mycology	Society for General Microbiology
British Society for Neuroendocrinology	Society for Reproduction and Fertility
British Society for Proteome Research	Universities Bioscience Managers Association
British Toxicological Society	UK Environmental Mutagen Society

ADDITIONAL SOCIETIES REPRESENTED BY THE INSTITUTE OF BIOLOGY

Anatomical Society of Great Britain and Ireland	Institute of Trichologists
Association for Radiation Research	International Association for Plant Tissue Culture and Biotechnology
Association of Applied Biologists	International Biodeterioration and Biodegradation Society
Association of Clinical Embryologists	International Biometric Society
Association of Clinical Microbiologists	International Society for Applied Ethology
Association of Veterinary Teachers and Research Workers	Marine Biological Association of the UK
British Association for Cancer Research	Primate Society of Great Britain
British Association for Lung Research	PSI—Statisticians in the Pharmaceutical Industry
British Association for Tissue Banking	Royal Entomological Society
British Biophysical Society	Royal Zoological Society of Scotland
British Crop Production Council	Scottish Association for Marine Science
British Grassland Society	Society for Anaerobic Microbiology
British Inflammation Research Association	Society for Low Temperature Biology
British Marine Life Study Society	Society for the Study of Human Biology
British Microcirculation Society	Society of Academic & Research Surgery
British Society for Ecological Medicine	Society of Cosmetic Scientists
British Society for Parasitology	Society of Pharmaceutical Medicine
British Society for Plant Pathology	UK Registry of Canine Behaviourists
British Society for Research on Ageing	Universities Federation for Animal Welfare
British Society of Soil Science	
Fisheries Society of the British Isles	
Freshwater Biological Association	
Galton Institute	

ADDITIONAL SOCIETIES REPRESENTED BY THE LINNEAN SOCIETY

Botanical Society of the British Isles	Systematics Association
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APPENDIX 8

Memorandum from Professor Nigel Harvey, University College, London

CONTENTS

1. Witness background
2. Executive summary
3. Estimating risk: Why there is a need to consult multiple sources of advice
4. Recommendations for advice format
5. Recommendations for number of advisors
6. Recommendations for procedures to integrate advice from multiple sources
7. Recommendations for use of judgment when integrating advice
8. References

1. WITNESS BACKGROUND

1.1 Nigel Harvey is Professor of Judgment and Decision Research at University College London. His research into judgment and decision-making has been funded by the Economic and Social Research Council for the past 15 years. His particular areas of expertise include the role of judgment in forecasting and advice-taking. His research is empirical and based on experiments, simulations, and questionnaire studies. He is co-editor of the primary reference text of human judgment and decision-making (*The Blackwell Handbook of Judgment and Decision Making*, 2004). He is former President of the European Association for Decision Making. His current research is funded by ESRC Project Grand R000230114 “*Trust in advisors: Origins, effects, and implications for risk communication*”, by Leverhulme Trust/ESRC Programme Grant “*Towards a Science of Evidence*”, and by the ESRC Centre for Economic Learning and Evolution.

2. EXECUTIVE SUMMARY

2.1 Advice about risk levels should be obtained from a number of sources. If advisors are independent of one another, three to five estimates should suffice. If they are not independent, more advisors should be consulted.

2.2 Advice about risk levels should be provided in numerical form. For communicating risk levels to the public, frequency forecasts are useful.

2.3 Different estimates for the level of some risk should be combined using some formal procedure. When no information about the relative quality of advice from different sources is available, the median or mean value can be taken. (There are arguments to support the view that the median is often preferable.) When information about the quality of advice from different sources is available, advice can be integrated by using a weighted average.

2.4 To be realistic, it is important to recognise that decision-makers often integrate advice by using their own judgment rather than a formal procedure. This introduces error into the final risk estimate. Decision-makers using their judgment to integrate advice from different sources should be cautious about using advisors' experience in the domain or the cost of their advice as proxies for their expertise. If they have sufficient advice from sources that they have consulted, they should not include their own estimate or opinion among those they integrate. They should also take care to ensure that characteristics of their advisors (eg whether they are internal or external) that are irrelevant to the quality of the advice produced do not influence the weight that they place on advice received from different sources.

3. ESTIMATING RISK: WHY THERE IS A NEED TO CONSULT MULTIPLE SOURCES OF ADVICE

3.1 There is a body of scientific research into factors that determine the influence of advice on decision-makers. Much of it is specifically concerned with advice about risk. Results of this research may be of interest to the inquiry for two reasons. Primarily, they are relevant to government use of advice. However, some are also relevant to the influence that government advice has on decisions and behaviour of members of the public.

3.2 A distinction is often made between risk, where the probability of an undesirable event is known, and uncertainty, where that probability is unknown. For example, the probability of death when driving a car may be regarded as known, whereas the probability of death from eating British beef in the 1990s may be regarded as unknown. According to this view, the former situation concerns risk and the latter uncertainty.

3.3 In practice, as Slovic¹ has pointed out, there are disputes about levels of risk associated with hazardous activities even when data about the frequencies of death or injury associated with those activities are available. This is because of disagreements about how outcomes should be categorized (eg different views

about what constitutes serious injury or about how long after an event death can be associated with it), because of sampling variations (eg samples vary in size and in when and where they are obtained), and because of doubts about the relevance of certain samples to the risk assessment at hand (eg concerns about whether risk estimates obtained from adults can be generalized to cover children). Thus there is always room for differences in opinion about the level of risk associated with any activity.

3.4 To deal with these differences in opinion, people making decisions and formulating policies need to obtain risk estimates from a number of different advisors. The different risk estimates that they receive must then be integrated in some way.

3.5 The reason that combining advice from different sources improves accuracy of the final risk estimate is as follows. Each estimate from an advisor can be regarded as comprising the true value of the risk, a bias, and some random error. Combining estimates from advisors improves accuracy by producing some cancellation in the random error and, if the direction of the bias varies across advisors, some cancellation in the bias.

4. RECOMMENDATIONS FOR ADVICE FORMAT

4.1 Advice about risk levels should be provided in a numerical form. There are two reasons for this. First, it is easier to combine numerical estimates than verbal ones. Second, different people use the same verbal labels (eg quite high, fairly low) to refer to different numerical levels of risk.² For example, whereas one person may use the term “quite high” in a consistent manner to refer to a 1% to 2% chance of an undesirable outcome, someone else may use the term “fairly low” in a consistent manner to refer to the same level of risk.

4.2 Numerical estimates of risk can be expressed in various ways. Risks expressed as frequencies (eg 10 out of 1,000 cases) appear to be easier to appreciate than those expressed as probabilities (eg a probability of 0.01).³ This may be particularly important when communicating risks to the general public.

5. RECOMMENDATIONS FOR NUMBER OF ADVISORS

5.1 Simulation studies have shown that, when advisors are independent, most of the improvement in accuracy that arises from taking advice from multiple sources can be obtained with relatively few advisors. Integrating advice from just three to five independent sources greatly improves accuracy of the final estimate.⁴

5.2 When advisors are not independent (ie they are influenced by each other or by some common source), more advisors are required to produce the same gain in accuracy in the final estimate.⁴ For example, a decision-maker who uses three to five advisors when they are independent may need to use five to seven advisors when they are not, in order to obtain the same benefit from using multiple sources.

6. RECOMMENDATIONS FOR PROCEDURES TO INTEGRATE ADVICE FROM MULTIPLE SOURCES

6.1 Estimates obtained from different advisors should be integrated by using some formal (“mechanical”) procedure. Possibilities include taking the average, the median, and the mid-range. Many studies have shown that formal procedures outperform judgment in most situations in which information from different sources has to be integrated.^{5,6,7} This is because, unlike judgment, such procedures do not add random error during the process of integration.

6.2. What formal procedure should be used to integrate advice from different sources when decision-makers have no records of the past quality of the advice from those sources? The answer to this appears to depend on the format of the advisory estimates. Probabilities are estimates that are bounded at both ends of the scale (0 and 1). Likelihoods expressed as percentages are also bounded in this way (0% and 100%). However, odds ratios are not bounded. With bounded estimates, the simple average will generally provide a reasonably good means of integration. With unbounded estimates, the median or a trimmed average (excluding one or two of the most extreme estimates) is to be preferred.^{8,9} Technically, the reason for this is that distributions of human responses have thick tails¹⁰ and so even a small sample of such responses is relatively likely to include a very extreme value that could distort the average.

6.3. If decision-makers do have records of the quality of past advice that they have received from different sources, they should first check to see whether some advisors are noticeably better or worse than others are. If none are, they can proceed as before (para 6.2). However, if accuracy of different advisors varies considerably, their advice should be weighted according to their past accuracy. For example, a weighted average could be used to integrate it.

7. RECOMMENDATIONS FOR USE OF JUDGMENT WHEN INTEGRATING ADVICE

7.1 Although formal procedures provide the best means of integrating various estimates of risk received from different advisors, we have to accept that many decision-makers prefer to use their judgment to resolve differences between advisors.¹¹

7.2 Consider first the situation in which a decision-maker has not formed his or her own opinion about the level of risk before receiving advice. Studies have shown that without information about past accuracy of advisors, such a person will base their judgment on the median of the advisors' estimates.¹² However, their judgment will include some random error and, hence, will not be as accurate as if the median were calculated formally. With information about the past accuracy of advisors, the decision-maker's final judgment will weight the better advisors more heavily.^{12, 13} However, again, their judgment will not be as accurate as a weighted average calculated formally would be. In this case, there are two reasons for reduced accuracy. First, some random error will again be included in their judgment. Second, the difference in how heavily good and poor advisors are weighted when judgment is used is not as large as it should be.^{13, 14} So decision-makers using their judgment to integrate advice should be encouraged to place more emphasis on their better advisors. One way of helping them to do this is to provide them with a continuously updated record of the advice that they have received from different sources.¹⁵

7.3. In many cases, information about the past accuracy of advisors is unavailable. In other words, there is no explicit information about advisors' expertise in the domain of interest. In these circumstances, decision-makers may consider their advisors' experience in a domain as a proxy for their expertise in it. Hence, they place more trust in their more experienced advisors (ie they weight advice from more experienced sources more heavily when coming to their final judgment).¹⁴ However, as with expertise, they fail to differentiate sufficiently between their advisors. They are influenced too little by highly experienced advisors and too much by less experienced ones.

7.4. It is worth emphasizing that expertise does not increase with experience in all domains. (Researchers have had some success in identifying the characteristics of domains in which the relation fails to hold.^{16, 17}) Hence, relying more on more experienced advisors is not always a good strategy.

7.5. Advisors are also influenced more by advice that they have paid for.¹⁸ Amount paid for advice may act as a proxy for expertise in the same way that advisor experience often does. Again, however, decision-makers should exercise some caution. Useless advice often costs a lot.¹⁹

7.6. Consider now the situation in which a decision-maker has formed an opinion of their own about the level of risk before receiving advice. Should this decision-maker include their own opinion as well as those of their advisors in the set of opinions that they integrate into a final risk estimate? Many studies^{14, 20, 21, 22} have shown that doing so results in decision-makers being too influenced by their own views and insufficiently by those of their advisors. On the other hand, when very few opinions are being integrated, the addition of an extra one can be expected to be particularly beneficial.⁴ Thus, it is reasonable to suggest that decision-makers should not include their own opinion among those that they are integrating when advice from a fair number of sources is available. If they do include their own opinion, they should make every effort to ensure that it does not receive greater weight than those of their advisors.

7.7. There is evidence that decision-makers are influenced by characteristics of their advisors that should not influence them. For example, people say that they trust advisors more when those advisors share their (moral) values.^{23, 24} Decision-makers should do all they can to ensure that they do not place greater weight on advice from sources who are more similar to them unless they have evidence that advice from those sources has been better in the past than that from other sources. (This recommendation may be relevant to how advice from internal and from external sources influences decision makers.)

January 2006

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APPENDIX 9

Memorandum from Campaign for Science and Engineering in the UK

INDEPENDENT EXPERTISE TO ASSESS RISK AND SCIENTIFIC EVIDENCE

1. The Campaign for Science and Engineering is pleased to submit this response to the Committee's inquiry into scientific advice to Government. CaSE is a voluntary organisation campaigning for the health of science and technology throughout UK society, and is supported by over 1,500 individual members, and some 70 institutional members, including universities, learned societies, venture capitalists, financiers, industrial companies and publishers.

2. CaSE does not profess to have specific expertise on the details of the three case studies that the Committee will be addressing, and our comments are intended to contribute to a more general critique of some aspects of the way in which central Government obtains, interprets and uses scientific advice.

THE CHIEF SCIENTIFIC ADVISER'S GUIDELINES

3. CaSE believes that the *Guidelines on Scientific Advice*, first issued during the tenure of Sir Robert (now Lord) May as Chief Scientist and revised under Sir David King, form an excellent basis for Government handling of scientific information. The *Guidelines* are admirably succinct and clear, and if properly followed in all cases, would greatly strengthen the Government's policy-making. There can be no question that their implementation has improved matters since the days of BSE, one of the worst-handled scientific issues in modern times, which was a catalyst for specifying many of the principles embodied in the *Guidelines*.

4. CaSE's concerns surround two areas. First, it is only possible for Government to handle risk and science appropriately if it has a sufficiently expert and critical in-house capability to allow it to formulate the questions it needs to ask of external experts. Second, it is necessary to identify accurately the subjects on which research evidence is needed, as distinct from those that demand "common sense" or political judgement. We develop these two points further below.

INDEPENDENT EXPERTISE WITHIN GOVERNMENT

5. One of the ways in which Government can draw on a wide range of expertise is to bring into its ranks experts from industry, academia or elsewhere, to provide an extra, independent view to policy-making. The role of Chief Scientific Adviser is the obvious example, and CaSE has certainly supported much of what recent incumbents have said and done.

6. The practice extends further down the Civil Service, supposedly including (since 2002) a Chief Scientific Adviser in every Department that undertakes an appreciable amount of science.³² But as members of the Committee know, it was only after one of the Committee's inquiries pressed very hard that the Department for International Development appointed a Chief Scientist. When asked in the spring of 2004 whether they had Chief Scientific Advisers, the Department for Education & Skills said it "does not have a designated chief scientific adviser"³³ and the Department of Culture said that its "has not appointed a chief scientific adviser".³⁴ While the DfES at least made the case that its Director of Higher Education held some responsibility in this area, the DCMS made it plain that it had no intention of actually implementing official Government policy in this area, even though it invests about £18 million of taxpayers' money in science annually.³⁵ It is responsible for institutions of major scientific importance, such as the Natural History Museum, the Science Museum and the British Library, as well as for policy in areas such as sport, where science is clearly important (the UK will not maximize its haul of Olympic medals at the 2012 London games if the people who run sport do not take science seriously).

7. In 1999, the Council for Science & Technology (CST) suggested that "Departments should also consider making more proactive use of inward and outward secondments of scientific and technical staff at all levels".³⁶

8. In the autumn of 2003, some four years later, Dr Brian Iddon MP tabled a series of Parliamentary Questions to ask Secretaries of State "how many people from science and technology backgrounds have been seconded into the Civil Service in his/her Department in each of the last five years for which data are available?"³⁷

9. The answers showed a truly astonishing range of attitudes towards science. The Department of Environment, Food and Rural Affairs produced figures showing an overall average of 18 secondments per year, the majority from science and technology sectors, while the Home Office gave accurate figures for overall secondments but was unable to count those with a science background. Neither the Culture Department nor the Department of Trade & Industry had any idea how many scientific secondees they had employed. This was particularly surprising in the case of the DTI, which has responsibility for science policy, and which services the organization that recommended the secondments in the first place (the CST). Most shocking of all, the then Secretary of State for Education reported that his Department had not seconded a single person with a science or technology background in the previous five years. The DfES is responsible not just for all aspects of science education but for the universities, which carry out billions of pounds worth of scientific research a year.

10. We accept that these figures are now two and half years old, but they suggest that Departments have been at best slow to wake up to the need for external scientific expertise. We do not purport to list individual examples of bad policy decisions that would have been improved by specific civil service appointments, but believe the general point to be important.

11. The system of handling scientific advice within Government will not really be fit for purpose until Departments build into their structures a constant flow of scientifically-trained individuals, who bring the eyes of independence to the overall handling of information and uncertainty relating to science and engineering.

³² *Investing in Innovation*, HM Treasury and other departments, 2002.

³³ *Hansard* [House of Commons] 19 April 2004.

³⁴ *Hansard* [House of Commons] 22 March 2004.

³⁵ http://www.ost.gov.uk/setstats/2/t2_1.htm

³⁶ *Review of Science & Technology Across Government*, Council for Science & Technology, CST, 1999.

³⁷ *Hansard* [House of Commons] 19 and 20 November 2003, and associated letters in the House of Commons Library.

IDENTIFYING QUESTIONS ON WHICH SCIENCE IS NECESSARY

12. During the recent furore over the rules surrounding who may or may not work in schools, it is has been revealed that some people known to have admitted to sexual offences have been permitted to work with children, even though the public is manifestly and rightly extremely risk-averse on this subject.

13. What is rarely expressed clearly is that the ministerial decisions involved in many policy arenas (of which this happens to be a current example) break down into two distinct remits. First, a single decision must be taken as to what constitutes an acceptable level of risk. This is an issue of political judgement, attempting to read the democratic will of the nation. It is the sort of decision that, under our system of Government, is clearly a matter for the personal decision of ministers. Different ministers of different parties, at different times and under different circumstances, are constitutionally entitled to take different views on issues of this general kind.

14. Second, individual decisions must be taken about the actual level of risk posed in particular cases. Although there may be a degree of uncertainty surrounding such cases, the uncertainty should be dealt with in the context of evidence. In the current example, although ministers have sought to claim that particular individuals in particular circumstances pose a low level of risk to children, they have not (to our knowledge) cited any research evidence to support whatever criteria they might be employing.

15. A leading journalist has been called “brave” for pointing out that “I see a world of difference between looking at dirty pictures and doing something dirty”,³⁸ arguing that ministers may have been justified not to ban someone from teaching on the basis of his history of internet usage. But others observe that it is perfectly possible that people who access inappropriate electronic material have a higher likelihood of committing other offences.

16. The point is that disagreements of this kind cannot be decided by a minister’s judgement or a journalist’s whim; they can only be settled by serious quantitative research.

17. CaSE clearly makes no comment about the individual case or the specific policy and has no expertise to judge whether appropriate research evidence exists. But it is plain that ministerial judgements have been made, purporting to quantify risk without any attempt to cite the generic evidence base by which criteria may be assessed.

18. In the present case, the point may well turn out to be irrelevant in the long run, because it seems that ministers are adjusting the level of risk considered acceptable to such a low level that there would be no room for ministerial discretion in such cases. But it remains that case that ministers have quantified risk on the public’s behalf, and have done so at worst without any research base or at best on unspecified (and hence unchallengeable) research.

19. If this attitude pervades a large range of Government decision-making, then the admirable principles expressed in the *Guidelines on Scientific Advice* cannot be implemented. It is crucial that ministers and civil servants adequately differentiate between decisions about the general level of risk considered acceptable in particular areas and estimates of the actual level of risk posed in specific cases.

January 2006

APPENDIX 10

Memorandum from Sense About Science

1. BACKGROUND TO THIS MEMORANDUM

1.1 Sense About Science is a registered charitable trust, formed in 2002, to promote an evidence-based approach in public discussions about science and medicine. We work with scientists to promote scientific input into discussions in all types of non-science media and in other forums. We work with civic groups, journalists and institutions with a public role to encourage understanding of scientific research and its findings and to put them in touch with scientists. While much of our activity is concerned with specific issues, such as vaccines or chemical safety, we also run a programme to promote wider understanding of scientific practices—and of scientific peer review in particular—to help the public to establish the status of claims they encounter about risks and benefits in relation to science and health.

1.2 This memo is based on observations drawn from the work undertaken as part of our peer review programme:

- In November 2002, Sense About Science established a working party, under the Chairmanship of Professor Sir Brian Heap, to look at how an understanding of peer review might help the public to weigh the relative merits of claims on scientific and medical issues. The report of the working

³⁸ *Daily Telegraph* 13 January 2006 and 14 January 2006.

party, "*Peer Review and the Acceptance of New Scientific Ideas*" was published in June 2004. It is available from Sense About Science. Over 12,000 copies have been requested or downloaded to date.

- Following the recommendations of the working party, in April 2005 Sense About Science undertook a series of workshops with educational bodies, patient groups and information providers to produce a user-friendly short guide to the peer review process. This guide, "*I don't know what to believe*" was published in November 2005. It does not present peer review as a guarantee, although it draws comparisons with kite marking, but rather uses an explanation of the scrutiny in the process to explain that not all claims have the same status. Over 40,000 copies have been requested to date. An electronic link to the guide is now provided on the websites of over 200 organisations providing health information, discussions on science-related issues or news. We have noted particularly high demand from medical and health information charities and patient groups.

2. THE IMPORTANCE OF STATUS OF EVIDENCE FOR THE PUBLIC

2.1 Sense About Science deals daily with inquiries about what is good and bad science in public discussions. The majority of these are related to health scares. Some are related to matters that are the subject of policy development. Many in science and government have expressed frustration about the extent of non-reviewed claims, misleading information, hype and scare stories and would like to see these restricted. From experience of responding to public discussions and questions, we have come to the following conclusions:

- 2.1.1 It is not possible (nor desirable) to prevent people from encountering a wide range of information about science and health on the internet and in the news media.
- 2.1.2 People do get very worried and frustrated by conflicting claims and misleading information. However, it is not feasible to quality-assure such information and would likely be counter-productive to try.
- 2.1.3 There is already something better than a quality assurance scheme in place: the system of critical scrutiny that is peer review of research results. Across science, it is widely accepted that there is no better system, although improvements could be made in aspects of its execution.
- 2.1.4 Peer review has rarely been explained to the public and consideration has only been given to its value to the scientific community. However, an understanding of the process through which scientific research starts to be scrutinised and evaluated can be a helpful tool for the public to sift information and understand its status. The high demand and positive reaction to the Sense About Science short guide seems to support this.
- 2.1.5 The centrality of peer review to the selection of scientific research results for consideration in forming scientific assessments means that it is also very significant for accounting for and explaining those assessments, or policies based on them, to the wider public. It is difficult to envisage open and accountable development of policy that did not include clear information about the status of the evidence on which decisions are based (rather than just the content of the evidence).

3. CLARITY ABOUT THE STATUS OF EVIDENCE IN SCIENTIFIC ADVICE, POLICY DEVELOPMENT AND ITS COMMUNICATION

3.1 From the perspective of good policy making, it is also clearly important that the status of evidence is understood at all stages and by all parties. As appears to be indicated in the example of the Physical Agents Directive (EC 2004), which is being considered by the Committee, losing sight of the status of evidence can damage development of good or workable policy and lead to a failure to provide a coherent account of the evidence on which it is based.

4. INFORMATION ABOUT THE STATUS OF EVIDENCE

If information about the status of evidence is as important as the evidence itself, then what kind of information should be sought and communicated? The following list is drawn from our observation of cases (such as the Physical Agents Directive 2004) and our working party deliberations (Sense About Science 2004), but it is likely that it should be longer.

4.1 *Is it peer reviewed?*

Peer review is a dividing line: it indicates that work has been scrutinised for its validity, significance and originality. There is an expectation that scientific evidence used by Government should be peer reviewed (Chief Scientific Advisers' Guidelines 2000, under review and correspondence on these OST 2005). However, publication of a paper in a scientific journal would not usually be a sufficient basis for policy development, particularly where a proposed policy or conclusion rests on scientific evidence very specifically (as with the setting of exposure limits, for example.) This is for three reasons, which are quite well-known:

- (i) There is variation in the quality of peer review. Some journals are of a higher calibre than others or draw on expertise more specifically in the field of inquiry. The rigour of reviewers can vary.
- (ii) Peer review checks for validity, significance and originality. It does not guarantee that the results can be repeated, nor does it provide a guarantee against all mistakes or fraud.
- (iii) The endurance of findings over time and under wider scrutiny by all scientists in the field is more important.

4.2 *Asking the same questions as journal peer review*

The kinds of checks made by reviewers were categorised in the Sense About Science Working Party report (2004) in the following way:

1. Significance: Are the findings original? Is the paper suitable for the subject focus of this journal? Is it sufficiently significant? (Is it a "me too" paper; is it "salami slicing?")
2. Presentation: Is the paper clear, logical and understandable?
3. Scholarship: Does it take into account relevant current and past research on the topic?
4. Evidence: Are the methodology, data and analyses sound? Is the statistical design and analysis appropriate? Are there sufficient data to support the conclusions?
5. Reasoning: Are the logic, arguments, inferences and interpretations sound?

Are there counter-arguments or contrary evidence to be taken into account?

6. Theory: Is the theory sufficiently sound, and supported by the evidence? Is it testable? Is it preferable to competing theories?
7. Length: Does the article justify its length?
8. Ethics: In papers describing work on animals or humans, is the work covered by appropriate licensing or ethical approval?

Clearly, some of these criteria for reviewers' comments are concerned with a paper's suitability for the journal to which it is submitted, or with presentational matters. However, items 3, 4, 5 and 6 on this list would appear to cover the most important information about status (particularly in cases where a small number of papers or slim findings are being relied upon). We would suggest that this "check list" is also straightforward enough that the significance of the four areas to the weight that can be attached to evidence would be understood by all parties.

4.3 *Status of one piece of evidence relative to other evidence*

This is self-explanatory. It would be expected that a paper is not considered in isolation but in the context of other evidence; and that citations and reactions to particular findings would be fully explored. Where such evidence is not available, attention could usefully be drawn to this as a limitation.

4.4 *The use of conference papers*

Research papers presented at scientific conferences have often begun a journey through the peer review process, with either the abstracts or, more unusually, the fuller papers being reviewed by a conference selection committee, but the papers are usually still unpublished and preliminary. The number of conference papers that do not go on to be published in peer reviewed publications is not exactly measured and varies between disciplines and conference bodies. However, scientists and conference organisers consulted by our Working Party (2004) reported that this number is "very high" and also that the final version of a paper may differ markedly to the content of the related conference paper, eg in the tentativeness of its conclusions. For this reason, it would seem sensible for Government agencies concerned with policy development to treat conference papers as indicators suggesting that a published paper may exist, or may be published soon, or that work may be in progress in the area. Related to this, when encountering a reference to a conference paper or abstract in another paper from the peer-reviewed literature, assumptions should not be made about the status of the original paper but, rather, it should be ascertained.

5. We suggest that none of this information about status is too complicated to be understood by non-scientists, to be requested by anyone involved in gathering evidence for policy or to be communicated alongside the evidence provided for a policy or course of action.

APPENDIX 11

**Memorandum from the Institute for the Study of Science, Technology and
Innovation, University of Edinburgh**

SUMMARY

1. This response to the Select Committee's inquiry into scientific advice to government has been prepared by Professor Robin Williams, Professor Joyce Tait and Dr Catherine Lyall in consultation with other colleagues at the University of Edinburgh's Institute for the Study of Science, Technology and Innovation (ISSTI).^{39, 40}

2. The response is structured according to the Inquiry's five main topics. Given the breadth of expertise represented by ISSTI we have chosen to focus on some generic issues that are germane to the use of scientific advice and, in particular, the application of social science knowledge and expertise in policy-making. However, a number of researchers within ISSTI are expert in issues such as the dependability of computer-based systems and information policy including privacy protection and public access to information which would be relevant to the Committee's case study on the technologies supporting the Government's proposals for identity cards should the Committee wish to pursue this with the individuals concerned.

3. In summary, we would wish to emphasise the need to foster cultural change within Government policy-making which embeds dialogue, learning and effective co-ordination of cross-cutting issues within the policy-making process, as the issues generated by the governance of science and technology are too complex to use a simple, "one size fits all" approach to evidence-based policy.

SOURCES AND HANDLING OF ADVICE

4. In practice, several models for the use of science in policy-making appear to be used by government and hence the extent to which policy-making is "evidence-based" varies considerably. There will be some issues around which research and policy options are rather well-established, where there is ample information, and where policy could be evidence-based (education policy is perhaps an example); in other areas, where the phenomenon is changing (especially in fields of scientific and technical change), discussion will focus upon how to frame issues/debates and there will be a dearth of information/evidence.

5. There is an argument that, in some spheres, focusing on gold starred sources of scientific evidence (eg randomised control trials) may neglect important evidence of other types: this may be a particular problem in areas that are not well researched. There are clearly major areas where evidence is not being effectively used to inform policy, either because the culture of politicians and the civil service is such that research is considered less important than action, academics are regarded with suspicion and there is no expectation that research will be consulted, or because no convincing evidence exists to guide policy and practice (e-Health being one example, although recently research has been commissioned to address this).

6. One can also envisage a continuum from more to less evidence-based (and bias prone): at one end of this continuum are clearly evidence-based decision-making groups (eg those used for developing NICE guidelines) while at the other are selective steering committees composed of invited "experts" who may share similar views. When selecting which "experts" to involve, government should be alert to the range of commitments and biases that advisers may bring. Among both social and natural scientists are many individuals who have strong personal commitments and potential biases arising from a career in, membership of, or sympathies with various pressure groups and interests. Their research may be funded by an independent research council or charity but the research outcomes may still be biased by the opinions and motivations of the researchers. In general, bias arising from people's membership of pressure groups is less likely to be remarked upon than the potential for bias amongst industry stakeholders or those funded by them. However, the research in question often contributes to decision-making in the same political arenas as that funded by industry. These issues highlight the benefits of having a diversity of views and backgrounds within advisory groups.

³⁹ ISSTI was established to carry forward and consolidate the interdisciplinary network of research in science and technology studies at the University of Edinburgh, coordinated by the Research Centre for Social Sciences under the directorship of Professor Robin Williams. It involves a range of other specialist centres and groups across the College of Humanities & Social Sciences (including the ESRC Innogen Centre of which Professor Tait is director) and has extensive links with colleagues in the College of Science & Engineering, especially Informatics, and the College of Medicine & Veterinary Medicine. Together these constitute a vital and vibrant field of activity: promoting, undertaking and disseminating high-quality research as well as engaging with policy and practice.

⁴⁰ Professor Tait and Dr Lyall have previously submitted advice on behalf of the ESRC Innogen Centre to the Office of Science and Technology on the use of scientific advice in policy-making.

7. Bias is inevitable, whether it arises from career-based motivations, financial considerations or personal value systems, or as is more usual, a combination of all three⁴¹. These points have been strongly emphasised by social scientists working on the social construction of science and knowledge. The challenges that we now face in using research as a basis for evidence informed decision-making are to develop strategies, procedures and criteria to evaluate the quality of the available evidence from both social and natural sciences, particularly where there are conflicts of interests or values.

RELATIONSHIP BETWEEN SCIENTIFIC ADVICE AND POLICY DEVELOPMENT

8. Mechanisms to ensure early identification of appropriate research need to be fostered. Too often there is an illusion that applied, policy-oriented research is like turning on or turning off the tap from which all knowledge flows but, in reality, research cannot just be turned on at will to provide solutions to policy-makers. We would therefore endorse many of the recommendations made in the Council for Science and Technology's (CST's) report, *Policy through Dialogue*⁴². In particular, we support the need to foster a culture change within government where *continuous* dialogue—rather than ad hoc consultation—is seen as a normal part of government's policy development processes on science and technology-related issues. Such an ongoing relationship with relevant experts, the public and their representative groups should be an integral part of departmental "Horizon Scanning" thereby ensuring that policy-makers are much less likely to be taken unawares by upcoming issues.

9. The effective handling of scientific issues that cross departmental boundaries is vital. Nasty surprises can often occur in the cracks between departments. Cross departmental issues are becoming more difficult to manage as the complexity of multi-actor, multi-level policy-making in science and technology increases which necessitates more creative methodologies (possibly involving new computing solutions) for tracking related policy developments across departmental boundaries, in order to avoid duplication of effort or conflicting activities.

TREATMENT OF RISK

10. The use of evidence in risk-related decision-making is changing. While often crucial to decision-making, scientific evidence has, itself, become contentious in a number of different policy arenas, particularly in disputes around technology that concern questions about people's values and belief systems (such as, for example, the use of embryos in life sciences research). Current policy processes do not readily accommodate such value positions and those who attempt to take policy decisions solely on the basis of evidence are finding that science and technology are becoming increasingly ungovernable as the evidence base for decisions is challenged and eroded. Recognising this, and finding more transparent mechanisms to allow values-based factors to be adequately expressed as part of the evidence-based policy process, may help to resolve some of the current impasses affecting policies involving science.

11. Scientific debates in the policy realm increasingly take place in a context of confusion about the facts behind the science (because it is at the cutting-edge of knowledge) and in an atmosphere of growing mistrust in the sources of the available information. Scientific evidence has thus become more open to challenge, not just on the basis of the quality of the science that led to it but also on the basis of the motivations of the scientists involved. Thus it can be difficult today to get uncritical acceptance of evidence that comes from industry (for example, data produced in support of new pharmaceutical products seeking registration). On the other hand, the motivations of scientists working "in the public good" are much less likely to be challenged and indeed their evidence is often weighed in the balance as being of greater value because it is presumed to be "unbiased".

12. The Precautionary Principle can be understood to consist of a risk/value calculation (where the precaution is proportionate to the risk) or it can be used as a tool to indicate a value-based position that tells us which risks are acceptable and which are not. The Precautionary Principle allows the use of precaution in advance of evidence of harm (unlike the reactive/preventative approach where evidence of harm is used as a basis for legislating to prevent future harm from happening). The problem with this is that "evidence" now becomes hypothetical and the degree of precaution which is appropriate in a situation becomes contested⁴³. While the Precautionary Principle is open to including value positions within a risk regulation framework, it has some inadequacies as a policy instrument because there is no mechanism for negotiating between different value positions and it has not necessarily moved decision-makers towards more robust evidence-based policies.

⁴¹ It is reasonable to assume that, in the same vein, the backgrounds of Government Chief Scientific Advisers may influence the type of research that is commissioned and the way that different types of research evidence are brought to bear in informing policy advice.

⁴² Council for Science and Technology (2005), *Policy through dialogue: informing policies based on science and technology*.

⁴³ Although use of appropriate simulations and consultation with experts and stakeholders using scenario-based methods may help to identify risks before they are detected in practice and make these debates less hypothetical.

TRANSPARENCY, COMMUNICATION AND PUBLIC ENGAGEMENT

13. The “public” is not a homogeneous group. It is therefore important to ensure that consultation/engagement methods are tailored both to the particular issue at hand and to the relevant stakeholder groups, in order to avoid wasted effort and generating consumer apathy. This is one area where ISSTI researchers are currently making a contribution by identifying better methodologies for involving members of the public in policy-making and agenda-setting. Policy-makers must be aware of the difficulty in reaching consensus when lay members are consulted on decisions related to science and technology. Lay members may also need to be briefed about technical issues and policy choices and this introduces the risk of imposing other people’s agendas (for example, it may encourage a tendency to look at a new technology as something that is automatically risky). We must therefore be very careful about what expectations we raise about public engagement. Moreover, there is a clear need for effective feedback so that those consulted can understand how their input is analysed in order to demonstrate how external contributions influence policy. Again, we would warn of the dangers of raising expectations about public engagement without subsequent feedback and the consequent “consultation fatigue” and disenchantment that this can engender.

14. Viable governance systems depend on dialogue, the involvement of a variety of institutions and the prevention of institutional polarisation. In the current trend towards public engagement there is a risk that policy-makers might downplay the significance of maintaining a dialogue with other important stakeholder groups, such as those from industry and technical specialist communities, in issues to do with science and technology. However, dialogue should not become a delaying tactic or a substitute for clear decision-making by government departments.

15. While new modes of governance are being developed to ensure greater stakeholder involvement in policy decisions and, at the same time, a sounder evidence base for such decisions⁴⁴, reconciling these twin aims can pose some challenges. In complex, often poorly characterised areas, there may be no consensus on the relevance of particular areas of scientific expertise and various scientific disciplines may compete for a voice and an influence on decision-making. This clearly necessitates greater transparency on the part of policy-makers on how they have discriminated among these competing demands. It also highlights why important methodological work of the type being undertaken by ISSTI researchers on appropriate stakeholder involvement is worthwhile. Using expert consumers, as opposed to lay individuals is one method that has shown some promise, as in the Expert Patient programme. This ensures that evidence and consumer opinions are considered together and avoids great disparities between the agendas of expert and consumer groups. Conversely, sometimes public debate—within policy circles and amongst wider publics—may overlook important technical issues. One example is the emphasis in recent discussions of identity cards upon the data carried upon the card: this overlooks one of the key implications of such a card, namely that it would facilitate cross-referencing across a number of existing public sector databases.

EVALUATION AND FOLLOW-UP

16. One way forward would be to place more emphasis within government on creating mechanisms that enable the development of a corporate or institutional memory based on formal and informal evaluations of dialogue processes that have been used to inform science and technology policy (what we, as academics, would term “policy learning”). As CST notes (footnote 42), this would require sharing of information across government and its non-departmental public bodies and a central resource that draws together evaluations and case studies, and makes this information easily available to others. We would go further and recommend (i) that such lesson learning should not be limited to UK experience but include international perspectives and experience⁴⁵; and (ii) that policy-makers undertake a thorough de-briefing after significant science and technology related policy debates. These exercises should be facilitated by a range of external, independent advisers (not advocates who have been involved in the debate) who are expert in such lesson drawing. A number of academic colleagues within ISSTI are well-placed to contribute to such a process and, indeed, have done so in the past (for example, for the *GM Nation?* study).

17. Finally, the desire to demonstrate that a particular policy has been successful may often motivate a search for evidence that confirms this in a rather narrow way. As colleagues within ISSTI have demonstrated⁴⁶, this can result in the suppression of important lessons learned from difficulties encountered. These researchers have analysed examples of social learning and emphasise that, for learning to be successful, it is beneficial to develop different modes of evaluation geared towards project guidance and steering as opposed to the more traditional approach of *post hoc* evaluation.

January 2006

⁴⁴ Lyall, C and Tait, J (eds) (2005), *New Modes of Governance. Developing an Integrated Policy Approach to Science, Technology, Risk and the Environment*, Aldershot, Ashgate.

⁴⁵ With the caveat that wholesale adoption of policies developed overseas, which have not been specifically tailored to the UK context, are rarely successful.

⁴⁶ Robin Williams, James Stewart and Roger Slack (2005) *Social Learning in Technological Innovation: Experimenting with Information and Communication Technologies*, Edward Elgar.

APPENDIX 12

Memorandum from the Royal Society of Chemistry

The Royal Society is a learned, professional and scientific body with a duty under its Royal Charter “to serve the public interest” and it is in this spirit that the evidence is given. The detailed part of this submission has been prepared under the aegis of the Environment, Health and Safety Committee [EHSC] of the Society. Members of the EHSC serve the RSC as individual experts and not as representative of their employer.

The Society greatly welcomes the Select Committee’s timely inquiry on the mechanisms in place for the use of scientific advice and the way in which the guidelines governing the use of such advice are being applied in practice across Government. The Society hopes that the evidence received and the report produced will make a major contribution to improving the quality and procedures of the scientific advisory system.

The Government acknowledges that science plays an increasingly influential role in contributing to the formulation both of UK and international (including EU) policy and regulatory decisions, particularly on sensitive decisions involving people’s health and safety, animal and plant protection and the environment. For its part the Society acknowledges its role in seeking to provide the best scientific advice.

Scientific Advice to Government

Every scientific advisory system has a purpose. No-one has a monopoly of advice. There are limits to the advice that the Government can obtain solely from its own resources. The purpose of consultation is to enable the Government to tap the wealth of expertise that lies outside Government within the scientific community in order to bring this to bear upon the problems and issues that face the Government of the day.

Governments have to make decisions. These decisions have to be made by a certain time. If consultation is to be a substantive process—and not merely a public relations exercise—then the scientific community has to understand the pressures and constraints on Government and to operate as far as possible within the time framework of Government decision-making.

Equally, the Government has a duty to recognise that it has an obligation to consult outside its own sphere of departments and agencies and a duty to the scientific community to make the consultation process—and the time allowed for it—a practical reality and to manage it in a way which enables the consultation outcome to inform and benefit the decisions that it takes before they are taken. The scientific community wants a process of consultation and not ratification.

The Society takes the view that *why* and *how* scientific advice is sought, by whom and from whom, and *when* and *how* that advice is integrated into policy making are key questions of unending interest to the scientific community, to the Government—and no less to this Society.

The Society is fully committed to playing a constructive part in the scientific advisory system of the United Kingdom. It has previously submitted evidence to the Select Committee on the broad issues involved the way in which the Government obtains and uses scientific advice in the development of policy. [That evidence was published in HC 465 Session 1999–2000.]

The Society has previously drawn attention to the following issues:

- that scientific advice should be based on the best science available;
- that the UK needs a Science Base strong enough to comprise those who are expert and active at the forefront of science, both in generating new data and directly involved in investigating new phenomena, and whose expertise can be consulted by Government;
- that the UK’s many scientific societies should be properly consulted by Government—especially in view of the commitment of those societies which operate under a Charter to serve the public interest.

The Society would like to restate some of its concerns in the following areas:

- any degeneration of Government in-house scientific expertise (which might also reduce Government’s own role as an “intelligent customer”);
- the continuing need to develop clear, coherent and consistent Government policy on consulting the scientific community;
- the continuing need for the Government proactively to discover and contact new potential sources of scientific advice;
- that scientific and learned societies should not be undervalued or underused as sources of scientific advice by Government;
- the continuing perception (if not occasionally the reality) that some consultation with the scientific community is sometimes purely cosmetic;
- the use of private consultants by Government—which has the effect of undermining the traditional willingness of the scientific community to contribute to the formal consultation process—and any use of private consultants as a means of avoiding comprehensive consultation exercises;

- the costs of consultation, in particular the growth of special seminars and conferences—at which Government Ministers or other officials speak—where high fees *for attendance* are charged (the level of which may be prohibitive to some in the scientific community and create the impression that Governments may be influenced by those who can afford to attend);
- the continuing need for Government to follow-up their consultation exercises with sufficient feedback—eg the analysis of comments made and the transparency of advice received—to enable those consulted to gauge the extent to which their advice may have been taken into account.

There are mechanisms in place for the use of scientific advice and there are guidelines governing the use of such advice across Government. The Society believes that a better consultation process would help produce better public policy based on better evidence.

Consultation is a two-way process. The Society has advocated a Consultation Concordat between Government and the scientific community which recognises the mutual benefits of a consultation process that is of substance and not merely of form.

On the one side the Government must be prepared to consult in good faith and to provide a framework for consultation that allows the scientific community a proper opportunity—and sufficient time—to respond.

On the other side the scientific community must be prepared to respond to the opportunities provided by Government to express its views clearly and in sufficient time to make the advice of information useful to the Government.

A good scientific advisory system is necessary because Governments need access to the expertise and advice that lies outside Government. The role of Ministers should be less that of a Constitutional Monarch rubber-stamping the internal advice they receive and more that of an Umpire that assesses, and adjudicates as necessary between, the advice received from inside and from outside Government.

The main body of the Society's evidence deals with those questions which fall within an area of particular Society expertise: the Government use of scientific advice with respect to chemicals. This has been prepared under the aegis of the Environment, Health and Safety Committee [EHSC] of the Society. Members of the EHSC serve the RSC as individual experts and not as representative of their employer.

EXECUTIVE SUMMARY

- The RSC believes that there are underlying problems within the UK (and EU Agencies) concerning the understanding of the conceptual basis of health and environmental risk analysis by scientists involved in regulatory risk assessments and policy advice for, in particular, chemicals, due to lack of adequate academic and training facilities in the UK (and EU).
- The RSC recognises that, unless good scientific (and technical) advice is taken into the policy making process, the process will yield policies that are not technically acceptable or, worse, not technically feasible.
- It is self-evident that a key issue with regard to advisory bodies is the range of expertise available among members and the secretariats. The RSC has always advocated that advisory groups should where possible have sufficient expertise both in membership and secretariat to evaluate the information put before them.
- There is a problem concerning the nature and adequacy of the in house expertise in Government Departments. Even if most advice is to be gathered from outside it is necessary to have sufficient expertise to identify who is technically knowledgeable and to act as “intelligent customer” for the external advice.
- The RSC has some concerns that hazard based approaches and the precautionary principle are being used in situations where risk based approaches are more appropriate. The appeal of hazard based and the precautionary principle approaches is that they are easier to apply and administer, however such approaches may result in misdirection of effort to mitigate risk because they do not deal with the likelihood that particular hazards may be realised. Comparative risk assessment should aim to optimise the choice of options for a particular situation, taking into account potential risks to health, wildlife and the environment and the benefits to society as a whole.
- The application of the “precautionary principle” has to be proportional to the risks involved and there is a tendency (as with all regulators) to adopt a “gate-keeping” approach and a disproportionately “hard” precautionary approach when it is possible to pass the costs of implementation to others. There is a danger that, by introducing disproportion, innovation is stifled through the disproportionately high barriers to introducing newer and probably less risky materials.
- Confidence in the transparency of the process by which scientific advice is incorporated into policy development would be enhanced by providing a publicly available record detailing how scientific advice was used or not.

The Royal Society of Chemistry only wishes to respond to those questions which fall within its area of experience, and in particular on Government use of scientific advice with respect to chemicals

1. With that in mind the RSC believes that there are underlying problems within the UK (and EU Agencies) concerning the understanding of the conceptual basis of health and environmental risk analysis by scientists involved in regulatory risk assessments (in industry, the contract research organisations, consultancies and Government) and policy advice for, in particular, chemicals, due to lack of adequate academic, etc. training facilities in the UK.

2. This lack of understanding by those in Government and academia involved in the application of chemicals risk analysis in the regulatory setting renders any policy advice derived from experience of limited value. It also renders a serious discussion of individual points difficult.

3. The apparent trichotomy between the approaches of engineering risk analysts (dealing with, for example, major industrial accident hazards), chemicals health risk analysts (dealing with, for example, health issues for chemicals generally or for specified uses, such as biocides, plant protection products, food additives and contaminants, veterinary medicines, medical devices and medicines and with air, soil and water quality) and chemicals environmental risk analysts (dealing with environmental issues associated with the manufacture, use and disposal of chemicals and products and with air, soil and water quality) must be broken down, both within Government and more generally.

Sources and handling of advice

- *What impact are departmental Chief Scientific Advisers having on the policy making process?*
- *What is the role of the Government Chief Scientific Adviser in the policy making process and what impact has he made to date?*
- *Are existing advisory bodies being used in a satisfactory manner?*

4. The RSC recognises that, unless good scientific (and technical) advice is taken into the policy making process, the process will yield policies that are not technically acceptable or, worse, not technically feasible. In such circumstances the consequences include inappropriate Government positions, unsatisfactory/unenforceable legislation and potentially conflicting legislative requirements on those affected by legislation.

5. However, the scientific advice may come from the Chief Scientific Advisor or, through him, from scientific staff within the appropriate Department(s) and/or Agency(ies) as well as from Advisory Committees. The latter normally report to Ministers rather than to Chief Scientists and so should represent an independent line of advice to Ministers.

6. It is self-evident that a key issue with regard to advisory bodies is the range of expertise available among members and the secretariats. The RSC has always advocated that advisory groups should where possible have sufficient expertise to evaluate the information put before them. In cases where knowledge is limited, scientists can still make a valid contribution by providing an informed opinion based on experience as well as highlight where further research is needed, quantify the degree of uncertainty and suggest an appropriate course of action. The RSC supports soliciting input from a wide range of groups and in being open about the process and the people involved.

7. In most, if not all, advisory committees complete independence, ie freedom from bias, of the members cannot be obtained. There is some concern that evidence from some scientific experts may be marginalised because they are not considered as “independent” by virtue of their affiliation eg links to industry. However, it is important to note that experts working in the field are more likely to be up-to-date with developments than those who are not. In particular, it is in industry that the closest liaison between the different branches of risk analysis takes place.

8. In contrast the views of campaigning organisations that may have a vested interest in a particular outcome are often regarded as more credible and independent as, it is claimed, they are not directly involved in a particular industry. This is self-evidently incorrect as the campaigning organisations usually have a clear vested interest. Such organisations are often able to make unsubstantiated claims that can distort the discussion and make informed, evidence-based policy-making difficult.

9. Academic members of advisory committees too may have vested interests as they have to fight a continuous battle to secure continued funding of their work. So long as biases are openly acknowledged, affiliations, or lack of them, should not be a reason for disbarring from membership of an advisory body.

10. Two roles that the Chief Scientist(s) and scientific staff should undertake is to advise on possible membership of Advisory Committees, and to ensure that the overall biases of Advisory Committees are, as far as possible, balanced, and the biases of individual members of such Committees are understood.

11. The RSC notes that one role that the Government Chief Scientific Adviser has, whether by design or not, is to highlight key scientific issues to the public through the media (eg most recently in the “energy debate”). It is difficult to know, however, what weight the Government Chief Scientific Adviser actually has on policy development within Government.

- *Are Government Departments establishing the right balance between maintaining an in-house scientific capability and accessing external advice?*

12. There is a problem concerning the nature and adequacy of the in house expertise in Government Departments. Even if most advice is to be gathered from outside it is necessary to have sufficient expertise to identify who is technically knowledgeable and to act as an “intelligent customer” for the external advice. This requires adequate (usually broad, but senior level, and frequently interdepartmental) technical expertise and considerable networking skill (including the ability to network outside the current scientific “establishment”) in order to be able to identify the relevant expertise in the appropriate field.

13. Much of the required higher level conceptual expertise in, for example, risk analysis, as applied to issues within their discipline (eg for health risks arising from use of chemicals), requires extra-disciplinary knowledge and is outside the traditional interests of academic departments. It is not highly regarded academically (in terms of, for example, interest to the science Research Councils) and is conducted in penny packets (often individuals) who, if employed in academia at all, are employed outside the traditional mainstream. Given the difficulty in locating this expertise accurately, the very highest quality of networking is essential, and usually will require recruitment from outside the Civil Service. Often, this will mean recruitment from industry.

14. However, whilst in the past respected scientists existed in departments like DEFRA, increasingly reliance appears to be being placed on administrative staff to “buy in” the services of consultants. In many cases they lack the competency to frame the question, recruit the appropriate expert or understand the answer when it has been provided. Even where such departmental expertise is available, the scientists who are often located in Government agencies are too far removed from the policy making process.

Relationship between scientific advice and policy development

- *What mechanisms are in place to ensure that policies are based on available evidence?*

15. The mechanisms the RSC is aware of are the circulation of proposals for comment by interested bodies and presentations at advisory committees.

16. The US has a different, more long winded, but probably better model of public hearings on all new regulations. The RSC should also comment that the Environment Agency approach, to at least some consultations is to produce a response document which outlines all the comments made and their response, including arguments as to why some comments are being rejected.

- *Are departments engaging effectively in horizon scanning activities and how are these influencing policy?*

17. Given the lack of well-qualified risk analysts in Government, the “horizon scanning” activities tend to be focused on narrow technical matters and on obvious developments in public perceptions of issues.

18. Experience has shown that once an issue has entered the arena of public debate it is difficult to have an informed discussion on the scientific evidence. In order to have a balanced debate on issues of potential concern, the scientific community should be consulted as soon as such issues are identified so that scientific information can be presented to interested parties for their consideration before such issues become politicised.

19. The RSC also notes that more Government Departments are engaging in horizon scanning activities. For example, the Home Office introduced a horizon scanning group as part of its police science strategy. The RSC cannot comment, however, on how this group has influenced policy.

- *Is Government managing scientific advice on cross-departmental issues effectively?*

20. There have been attempts at such management (Inter Departmental Liaison Group on Risk Assessment and the Interdepartmental Group on Health Risks from Chemicals). These bodies bring together much expertise, but are only able to proceed at the “lowest common denominator level”. Further the influence they have on Government Departments depends largely on the quality of the individual members of ILGRA/IGHRC representing the Departments and the influence they have on Departmental attitudes. For specific issues such as consultations on EU actions, ad hoc liaisons appear the norm, and these depend on the qualities and attitudes of the individuals involved.

Treatment of risk

- *Is risk being analyzed in a consistent and appropriate manner across Government?*

21. It is difficult to analyse risks consistently when expertise is limited and fragmentary. For example, the splitting of regulatory risk assessment for chemicals across several NDPBs discourages the setting up of consistent risk analyses across Government and the development of a higher level conceptual framework within which to operate.

22. The training of risk assessors (regulatory scientists involved with schemes for assessing chemicals, either generally or for specified uses [biocides, plant protection products, veterinary medicines, medical devices, food additives/contaminants, drugs, etc]) is likewise piecemeal, is usually biased towards understanding the detail of interpretation of toxicological tests and is limited to that necessary for them to carry out the technical aspects of the work.

23. The RSC has some concerns that hazard based approaches and the precautionary principle are being used in situations where risk based approaches are more appropriate. The appeal of hazard based approaches is that they are easier to apply and administer, however such approaches may result in misdirection of effort to mitigate risk because they do not deal with the likelihood that particular hazards may be realised.

24. It is only through “risk based” approach that the lowest reasonably practicable level of acceptable risk can be achieved. A “hazard based” approach that provides a ranked list of hazards is also flawed because in reality most options possess a range of different hazards that will vary in magnitude from one option to another and often in opposite directions. For example, a highly flammable solvent may be less toxic than an alternative solvent of lower flammability. Thus although options can be readily ranked in terms of a specific hazard such as flammability, options cannot be ranked in terms of their overall hazard. The decision to choose one option over another should be on the basis of overall risk. Comparative risk assessment should aim to optimise the choice of options for a particular situation, taking into account potential risks to health, wildlife and the environment and the benefits to society as a whole.

25. The higher level conceptual understanding concerning risk (particularly risk in relation to the health and environmental risks posed by chemicals) within Government is often limited.

26. The approach of “delegating to the lowest level competent to carry out the function” militates against the development of the higher level understandings required for policy advice. This has become evident in the lack of higher level insight shown by the Interdepartmental Group on Health Risks from Chemicals. They have concentrated on the detail of interpreting toxicity studies rather than looking at how toxic risks are to be integrated with other areas of risk analysis, such as engineering risk analysis.

27. Hazard based approaches that seek to eliminate a particular substance by substitution and thereby the risk posed by that substance, may run counter to sustainability. This is because substitutes that may have a lower hazard profile may also have to be used in greater quantities or may consume more energy in order to provide the same level of efficacy.

— *Has the precautionary principle been adequately defined and is it being applied consistently and appropriately across Government?*

28. The definition of the precautionary principle from the Rio Conference has general support. There are variations in the application of the “precautionary principle” according to Departmental attitudes. Its application has to be proportional to the risks involved and there is a tendency (as with all regulators) to adopt a “gatekeeping” approach and a disproportionately “hard” precautionary approach when it is possible to pass the costs of implementation to others. There is a danger that, by introducing disproportion, innovation is stifled through the disproportionately high costs of introducing newer and probably less risky materials, compared with the costs of continuing those already on the market. If innovation is not to be stifled, then some form of benefit has to be introduced that outweighs the extra costs of meeting the regulatory requirements associated with the development of better (safer, more environmentally friendly, more sustainable) products.

29. There is, however, a wider problem as there is considerable uncertainty about the whole concept of the precautionary principle. The key issue that needs to be recognised is that the principle does not mean “better safe than sorry” since the application of the principle can often have directly adverse effects—banning DDT vs. deaths from malaria, banning brominated flame retardants vs deaths from fire.

— *How does the media treatment of risk issues impact on the Government approach?*

30. It can lead to immediate and often inappropriate responses which are at the time seen by ministers as politically expedient. Media, especially some representatives of the print media, often concentrate on “hazards” in their approach rather than on the risk that that hazard will actually be encountered. Much more measured responses would generally be beneficial.

Transparency, communication and public engagement

— *Is there sufficient transparency in the process by which scientific advice is incorporated into policy development?*

31. Confidence in the transparency of the process by which scientific advice is incorporated into policy development would be enhanced by providing a publicly available record detailing how scientific advice was used or not.

— *Is publicly-funded research informing policy development being published?*

— *Is scientific advice being communicated effectively to the public?*

32. Generally the public is unaware concerning scientific advice and for the most part lacks the knowledge to interpret it. However, that advice must be in the public domain so that, if things go wrong, there is suitable evidence to see that Government had functioned correctly.

Evaluation and follow-up

33. Systematic evaluation of the implementation of scientific advice is critical in order to improve the way scientific information is used in policy making.

— *Are peer review and other quality assurance mechanisms working well?*

34. Quality assurance, at least as understood in Good Laboratory Practice terms, tends to be missing from Government and Government Agency activities.

35. Peer review depends on the quality of the reviewer/review panel and of the material supplied to it. In many cases it is the Advisory Committees (and usually only one or two individuals within the Committees or specialist experts drawn into the Advisory Committee network for the specific issue) that perform this task. If the choice of Committee members is by the same group as that producing the advice there is a possibility of incestuous relationships.

36. Peer review itself does not provide any mechanism to ensure that research output is correct, only that the methodology as reported is consistent with the data output. Peer review is also a *pro bono* voluntary activity and is a system that scientists find beneficial for each other. The system is not designed to deal with QA of policy issues: two papers, both of which have been adequately peer reviewed, can come to diametrically opposite conclusions.

— *What steps are taken to re-evaluate the evidence base after the implementation of policy?*

37. The RSC is not aware of much if any *post hoc* examination of decisions taken. This is understandable since if such an analysis indicated that the original decision was incorrect this would be politically embarrassing. Possibly the only way to do this is to leave, for example, a 10 year gap before revisiting the decision.

January 2006

APPENDIX 13

Memorandum from the Science Council

The Science Council acts as an independent body for the professional institutions and learned societies across the breadth of science in the UK. Its purpose is to provide a collective voice for science and scientists and to maintain standards across all the scientific disciplines: a list of member organisations is attached as an appendix. Through member organisations, the Science Council promotes scientific excellence and aims to keep the country at the forefront of scientific and technological progress thereby raising innovation, productivity and performance. Through consultation and dialogue, the Science Council aims to ensure that science in the UK addresses the needs of, and is widely appreciated by, society at large.

Several individual members of the Science Council will be responding to this inquiry and where relevant they will cover in detail the case studies identified. In this response I am therefore focussing on the more general issues and principles of concern raised by member organisations.

Some very general points of agreement amongst members are that:

- there is a need for government to distinguish between scientific evidence; scientific opinion and advice from scientists based on the incomplete evidence available; and opinion and advice from scientists, non-scientists and campaigners where there is no evidence;
- there is potential for government to draw more widely on the expertise of learned and professional bodies;
- that the Science Council and its member organisations can work with government, Chief Scientific Advisers and others, in accessing and assessing scientific evidence and developing advice in a timely fashion;
- there is a need to address the increasing requirement for regional and local government to have access to scientific evidence and advice to support regional and local decision-making.

The learned societies and professional bodies that comprise the Science Council are able to draw on a wide range of expertise within each subject area from within their own membership. They interact with, and draw membership from the research environment, academia, industry and user communities. Many also have excellent international links. With these strengths, it is clear that Science Council members have enormous potential and an important role to play in capturing scientific evidence and developing scientific advice for agencies across government. However, in spite of clear guidance in current OST advice, this potential is not

being utilised. The Science Council believes it would be a positive step in building public trust and confidence for its members to be more closely involved in an open and transparent advisory scientific advisory network for government.

Working within their own fields of interest, the learned societies and professional bodies are able to identify the scientific evidence relevant to policy issues, and they are likely to have had issues of public concern, or key policy issues, on their own agendas for some time. In instances where there is as yet little or no clear scientific evidence, these bodies are also well placed to assist in the development of government policy by articulating current thinking, outlining different positions where they exist, and placing them within a wider context.

Science Council members are themselves membership bodies. Where the organisation does not have a standing advisory structure on the topic under consultation, it will want to have time to consult with its members and draw together the appropriate experts and interests. Government has an unfortunate tendency to work to very tight time scales when consulting on key issues and policy areas. While the sector appreciates that this may sometimes be unavoidable, for the most part more satisfactory horizon scanning would enable consultations to be conducted over longer periods which would enable a much more considered input from all stakeholders. Consultations undertaken at speed have a tendency to play to campaigning groups and others whose opinions and views may already be well formed but not underpinned by the evidence.

It is disappointing that in spite of the OST guidance on scientific advice, it is too often the case that specialist bodies are not consulted by government or non-departmental bodies in advance of policy positions or legislation being established: this was the situation for two of the three case studies in this Inquiry. The Science Council recognises that there are numerous learned societies and professional bodies and that many are fairly small and perhaps not well known: thus it may be that government finds it difficult to identify which organisations have an interest in the topic or how it might contact them. The Science Council would be most willing to act as a point of contact for government, and others, in helping to identify organisations with interests in a policy area.

Science Council members have welcomed the appointment of Chief Scientific Advisers in all government departments and there is strong support for the OST guidance on scientific advice and policy making. However, although some member bodies have regular contact with Chief Scientific Advisers in their relevant departments, this is not universally the case and the Science Council considers that Chief Scientific Advisers and their teams could do more to engage with the learned societies and professional bodies in their fields. The Science Council believes that closer working and ongoing dialogue would assist government and specialist communities to jointly scan the horizon more effectively, helping to identify “breaking news” issues in advance. By improving relationships more generally, the policy agenda would be widened beyond the interests of campaigning groups or business agenda: and more broadly based advisory networks, would lessen government dependence on a few individuals and generalists trying to cover many different specialisms. Ongoing dialogue would also enable learned societies and professional bodies to provide scientific advice and evidence to government more effectively. The Science Council could play a role in assisting the development of contact between all government scientific advisers with the relevant Science Council member bodies.

Member organisations have commented that often the department or unit responsible for handling an issue on behalf of government will have little or no in-house expertise in the area of policy under review. This was true in the case of the HSE lead on MRI and the EU Physical Agents Directive; and the UK Computing Research Committee has expressed disappointment with the extent to which scientific evidence and science-based development has been sought by government in the area of computing technology such as ID cards. There are other examples in both European and UK legislation and regulation. The Science Council view is that the lead government units must recognise the need to draw much earlier on many more sources of advice and expertise and they should seek to understand fully the potential impact of the wording of regulation and legislation before it is cast in stone. Too often the involvement of experts comes at a point when poorly drafted regulation has to be implemented in a way that minimises the unintended consequences.

The transparency of the process, the breadth of the input and the ability to review and evaluate in the light of changing circumstances or new evidence, are important if we are to maintain public trust and confidence in scientific advice to policy makers. The Science Council and its member organisations have a strong commitment to public engagement in science and many support extensive communication and engagement activities in addition to publishing accessible newsletters and journals and hosting informative web sites. They are not secretive cultures and the public and interested stakeholders would be to link advice and opinion back to broadly based learned societies and professional bodies: this could have the potential to increase trust and confidence in the scientific advisory process.

SCIENCE COUNCIL MEMBER ORGANISATIONS JANUARY 2006

Association of Clinical Biochemists
 Association of Science Education
 British Computer Society
 British Psychological Society
 Chartered Institute of Water and Environmental Management
 Energy Institute
 Geological Society of London
 Institute of Biology
 Institute of Biomedical Science
 Institution of Chemical Engineers
 Institute of Corrosion
 Institution of Environmental Sciences
 Institute of Food Science and Technology
 Institute of Marine Engineering, Science and Technology
 Institute of Materials, Minerals and Mining
 Institute of Mathematics and its Applications
 Institute of Physics
 Institute of Physics and Engineering in Medicine
 Institute of Professional Soil Scientists
 London Mathematical Society
 Mineralogical Society
 Oil and Colour Chemists' Association
 Royal Aeronautical Society
 Royal Astronomical Society
 Royal Geographical Society
 Royal Meteorological Society
 Royal Society of Chemistry
 Royal Statistical Society

APPENDIX 14**Memorandum from the Mobile Operators Association****INTRODUCTION**

1. The issue of public perception of mobile phone use and related network development remains on the political agenda. How the Government responds to scientific advice on mobile technology and health is vitally important for the UK economy.

2. The UK public has taken to the introduction of mobile phone technology incredibly quickly. Mobile phone use has increased from around 5 million handsets in 1995 to around 61 million handsets in use in 2005.

3. Along with the increased use of mobile handsets has come a continuing need to develop the mobile networks to give customers the coverage, capacity and service they increasingly demand, whenever and wherever they want.

4. Ongoing network development has, in some areas, increased community concern regarding, especially, the possible adverse health effects of mobile telephony. While the scientific evidence on both handsets and mobile phone base stations is reassuring, the radiofrequency emissions absorbed into the body from a handset are up to a thousand times greater than from a base station. Despite this, the majority of the concern, in the UK at least, has been regarding the base stations, or masts.

5. Why, despite its firm policy on the health issue, has the Government, its health advisers, and the industry been unable to adequately address these concerns, despite the increasing evidence of an absence of risk?

EXECUTIVE SUMMARY

6. The way in which risks are communicated by the Government, its scientific advisers and the media has a significant impact on the perception that the public has on how they may be affected by that risk.

7. There is often a significant misperception of what is meant by a “precautionary approach”. There is a real need for the Government, industry and scientists to better explain what is meant by precaution, and how that relates to public policy and, for example, the development of a new technology.

8. A precautionary approach can have unintended consequences. While precautionary measures are often necessary to ensure the protection of public health, they can often lead to costs which far outweigh the benefits of eradicating or reducing the risk. How the Government and the media handles precautionary advice is extremely important. This was seen most clearly recently with the “Sudan 1” food dye scare, which lead Alan Boobis, of Imperial College London, to compare the risk of eating the dye contained in processed food to the cancer risk of smoking one cigarette in an entire lifetime.⁴⁷

9. As has been seen in a number of public policy areas, the way in which specific risks are treated by the media can have a significant impact on the way in which the Government approached that issue. There is potentially more the Government can do to communicate scientific understanding to the public, in order to address public concern.

10. The establishment of the Science Media Centre may help to encourage a more balanced approach to the reporting of science stories in the press and broadcast media.⁴⁸

11. Dr Evan Harris MP, in his speech to the Mobile Operators Association/Social Market Foundation meeting at the 2005 Liberal Democrat Party Conference said that the precautionary principle should mean to proceed with caution in a research-based way, look for early signs of problems, and be prepared to invest more in investigating those. Interpreting the precautionary principle by jumping on the bandwagon and saying “no” to something because there is an alleged scare around it is the wrong approach.

PUBLIC PERCEPTION AND COMMUNICATION OF RISK

12. The Science Minister, Lord Sainsbury noted in his speech to the Mobile Operators Association/Social Market Foundation fringe meeting at the 2005 Labour Party Conference that a MORI poll showed that more than 71% believe that the media sensationalise science. People are sophisticated readers of newspapers, and do not always believe what they read; however, when the media gets it wrong, as they did with MMR, the consequences can be serious. The number of people being inoculated against MMR fell by 20%, increasing the danger of these life-threatening diseases. Not all the media treated this in the same way. One tabloid ran some 700 stories on this issue in 1998.

13. Lord Sainsbury went on to say that the government had done too little in the past to address people’s concern that regulatory systems are not keeping up to date with new scientific developments but has now changed its approach to these issues. The Government had moved from trying to help the public understand science, to helping them engage with science. The new approach will look at the implications for regulation of new areas of science, and what environmental, health and safety issues might be involved in any new technology. The public needs to be engaged so that they understand the issues. It remains to be seen whether the “new approach” will increase public confidence in scientific advice.

14. Andrew Lansley MP, Shadow Secretary of State for Health addressed the issue at the Mobile Operators Association/Social Market Foundation meeting at the 2005 Conservative Party Conference. He noted that media coverage always seems to apply the precautionary principle—ie if one cannot entirely exclude risk in a certain course of action, then this course of action should be dismissed. If this approach continues, the potential opportunity cost is enormous. If the principle had been applied to concerns over mobile phone masts, Mr Lansley argued, there would be no mobile phones in the UK. The precautionary principle must always be tempered with the proportionality principle.

15. A precautionary approach can have unintended consequences. While precautionary measures are often necessary to ensure the protection of public health, they can often lead to costs which far outweigh the benefits of eradicating or reducing the risk. How the Government and the media handles precautionary advice is extremely important. This was seen most clearly recently with the “Sudan 1” food dye scare, which lead Alan Boobis, of Imperial College London, to compare the risk of eating the dye contained in processed food to the cancer risk of smoking one cigarette in an entire lifetime.⁴⁹

⁴⁷ BBC News online 22 February 2005 <http://news.bbc.co.uk/1/hi/health/4286847.stm>

⁴⁸ The Science Media Centre is an independent venture working to promote the voices, stories and views of the scientific community to the news media when science is in the headlines. <http://www.sciencemediacentre.org/>

⁴⁹ BBC News online 22 February 2005 <http://news.bbc.co.uk/1/hi/health/4286847.stm>

SCIENTIFIC EVIDENCE AND PUBLIC POLICY

SOURCES AND HANDLING OF ADVICE

16. *Are existing advisory bodies being used in a satisfactory manner?*

17. It is vital that the Government takes full account of its scientific advice when developing or considering changes to public policy. Policy changes that respond to concern or a perceived risk, rather than sound scientific evidence, may well actually serve to increase the level of concern.⁵⁰

18. The advisory body for the Government on the issue of radio frequency emissions was, until April 2005, the National Radiological Protection Board (NRPB). Since then, the NRPB has become the Radiation Protection Division of the Health Protection Agency (HPA-RPD).

19. The NRPB/HPA-RPD has consistently supported and reinforced the precautionary approach recommended by the Stewart Report. Indeed, the NRPB report *Mobile phones and health 2004* published in January 2005 said *"The Board believes that the main conclusions reached in the Stewart Report still apply today and that a precautionary approach to the use of mobile phone technologies should continue to be adopted"*.

20. The report continued *"Since [the Stewart Report] the widespread development in the use of mobile phones world-wide has not been accompanied by associated, clearly established increases in adverse health effects. Within the UK, there is a lack of hard information showing that the mobile phone systems in use are damaging to health. It is important to emphasise this crucial point."*

21. Despite the lack of evidence of an effect, the ongoing gaps in knowledge still warranted a precautionary approach. The contents of the balanced report published by the NRPB were overshadowed by the media coverage that accompanied it. The coverage focused on the fact that there were still gaps in knowledge, rather than the overall reassuring message contained in the report.

22. This reporting created a gap between what the scientific community was saying about the evidence available on public exposure to radio frequency emissions, and the public perception of the risk created by that exposure. The Government could have responded to this by asking the Chief Medical Officer to clarify the contents of the report. Instead, no clarification was requested, and no comment was made.

23. By contrast, the Health Protection Agency Radiation Protection Division did respond, in September 2005, to erroneous newspaper reporting of a review of a condition called "electrosensitivity". A press statement said *"Recent newspaper articles about a forthcoming report from the Health Protection Agency are speculative, and various assertions about its contents are inaccurate."* The full statement is available on the HPA-RPD website at http://www.hpa.org.uk/hpa/news/articles/press_releases/2005/050912_electrosensitivity.htm

24. Media confusion regarding the health risks specifically associated with mobile telephony has been addressed by the Chief Medical Officer. In a statement published in August 2004, the CMO said *"There has been much research on mobile phones and more is continuing. Research to date has not shown any hard evidence that the health of the public, in general, is being affected adversely by the use of mobile phone technologies."*⁵¹

25. This was an excellent example of how to respond to erroneous or sensationalist media coverage of a scientific issue. There are many examples of when similar statements could be issued.

RELATIONSHIP BETWEEN SCIENTIFIC ADVICE AND POLICY DEVELOPMENT

26. *Is Government managing scientific advice on cross-departmental issues effectively?*

27. A key recommendation of the Stewart Report was the establishment of the Mobile Telecommunications Health Research (MTHR) programme in the UK. This is a £7.36 million project, jointly funded by the mobile phone industry and the Government, to address some of the gaps in knowledge identified by the Stewart Report. Some of the studies have already been completed, while others will be completed and published in 2006.

28. It is to be hoped that the publication and findings of the various studies within the programme will be considered before any changes to policy or public advice on mobile phone use or network development are made. Changes that do not reflect scientific evidence and advice will further undermine public confidence in science.

29. The issue of mobile telecoms network development cuts across three key departments: Office of the Deputy Prime Minister, Department of Health and the Department of Trade and Industry. While most of the scientific research is based on mobile handset use, scientific advice must take account of the issue of the effects of living, working or attending school or college close to a base station.

⁵⁰ *"The Precautionary Principle and Risk Perception: Experimental Studies in the EMF Area"*, Wiedemann and Schütz; Barnett *et al* http://www.who.int/peh-emf/meetings/archive/barnett_bsw.pdf

⁵¹ Statement of the Chief Medical Officer http://www.dh.gov.uk/AboutUs/MinistersAndDepartmentLeaders/ChiefMedicalOfficer/Features/FeaturesBrowsableDocument/fs/en?CONTENT_ID=4114134&MULTIPAGE_ID=5369548&chk=%2BRljwH

30. In this area, scientific advice is clear. As the Stewart Report noted in 2000 *“the balance of evidence indicates that there is no general risk to the health of people living near to base stations on the basis that exposures are expected to be small fractions of guidelines”* (p 5). This has been subsequently confirmed by the report of the independent Advisory Group on Non-Ionizing Radiation (AGNIR), which said, *“Exposure levels from living near mobile phone base stations are extremely low, and the overall evidence indicates that they are unlikely to pose a risk to human health.”*

31. The Government response to scientific advice and evidence, while consistent, has not succeeded in providing reassurance to the public on the issue. There is, perhaps, more that the Department of Health could do to address this and, while acknowledging the unanswered questions that remain, highlight the increasing body of evidence that suggests the use of mobile technology does not have a harmful effect on human health.

MOBILE PHONES AND HEALTH—CURRENT ADVICE

32. In 1999, in response to an increase in public concern regarding the possible health effects of mobile telephony, the Government established the Independent Expert Group on Mobile Phones (IEGMP). The work of the group resulted in the publication of the Stewart Report in 2000. Since that time, the Government has consistently followed the health advice of the NRPB/HPA on the issue of mobile telephony and human health.

33. The Stewart Report’s primary conclusion was that *“The balance of evidence to date suggests that exposures to RF radiation below NRPB and ICNIRP guidelines do not cause adverse health effects to the general population”*.

34. Since then, 27 independent scientific review bodies in the UK and around the world, including the World Health Organisation, have consistently concluded that the weight of scientific evidence to date suggests that exposure to radiowaves from mobile phones and base stations operating within international guidelines do not cause adverse health effects.

35. Despite the increasingly reassuring evidence from the scientific community, there has been little effect on the overall levels of concern regarding mobile phones and health. Since 1999, research undertaken for the MOA by MORI has shown that unprompted health concern amongst the general public has remained steady at around 3–5% of respondents, with peaks around the time of the publication of the Stewart Report and the NRPB report. However, when respondents are prompted, this concern increases to over 20% of respondents, with similar peaks.

GOVERNMENT ADVICE

36. The Department of Health produced two leaflets on this issue shortly after the publication of the Stewart Report. The leaflets, *“Mobile phones and health”* and *“Mobile phone base stations and health”* were produced in December 2000.

37. Both leaflets make clear that the balance of scientific evidence suggests that exposures to radio waves below levels set out in international health and safety public exposure guidelines do not cause health problems for the general population. They go on to say that there are gaps in scientific knowledge, which requires a precautionary approach to the use of mobile technology until more research findings become available.

38. These leaflets are now more than five years old. There has been a significant increase in scientific knowledge since then, as shown by the 27 international scientific reviews and in the UK by the MTHR programme. Despite this increase in knowledge, there has been no updated advice or information from the Government to the public on this issue. However, we note that the University of Surrey has recently conducted research on the leaflets and that this is likely to be published in 2006. It is important that the leaflets be updated.

TREATMENT OF RISK

39. *Has the precautionary principle been adequately defined and is it being applied consistently and appropriately across Government?*

40. The Stewart Report addressed the issue of precaution with regard to the use of mobile phones, and the development of the networks. In particular, on the issue of Standards, the Stewart Report stated in paragraph 1.27:

41. *“We recommend that, as a precautionary approach, the ICNIRP guidelines for public exposure be adopted for use in the UK rather than the NRPB guidelines. This would bring the UK into line with other countries in the European Union and accord with the Recommendations of the House of Commons Select Committee on Science and Technology Report on Mobile Phones and Health (1999) (paragraphs 6.19–6.42).”*

42. Upon publication of the Stewart Report in 2000 the UK mobile network operators announced immediately that they accepted this recommendation and have since carried it into effect.

43. In its “*Mobile Phones and Health 2004*” Report published in January 2005 the NRPB Board welcomed the introduction by government of tighter exposure guidelines for the general public (paragraph 19).

44. There were several other precautionary measures recommended by the Stewart Report including the establishment by Ofcom of its Sitefinder data-base and base station RF emissions audit programme. The operators have co-operated with Ofcom in populating the Sitefinder database on a quarterly basis. The audit has confirmed that exposures of the public from base stations are small fractions of the ICNIRP guidelines.

45. However, the precautionary approach recommended by the Stewart Report has in itself caused confusion within parts of the community and even within Parliament.

46. There is still much for the Government to do to explain the concept of risk and precaution to a sceptical public, and for comparative risks to be made clear. In the Strategy Unit report *Risk: improving government's capability to handle risk and uncertainty* of 2002 it was recommended that “Departments and agencies should make earning and maintaining trust a priority when dealing with risks to the public.” (p 107). It is clear that the Government still has much to do if it is to put this recommendation into practice.

47. *How does the media treatment of risk issues impact on the Government approach?*

48. Media treatment of risk tends to emphasise scientific uncertainties and potential dangers to the public. This results in pressure for action by government and regulators to address the issue and thereby protect the public. Such a problem is inherent to regulatory bodies as the Prime Minister noted in a speech on risk: “*Bodies set up to guard the public interest have one-way pressures. It is in their interest never to be accused of having missed a problem. So, it is a one-sided bet. They will always err on the side of caution.*”⁵²

49. The dangers of such a risk averse approach to society are clear. The most effective way to guard against such pressure resulting in unjustified measures being implemented is to ensure adherence to the better regulation principles whereby regulatory activities are transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed. Moreover, to meet these goals all proposals should be subject to a rigorous cost benefit analysis before being enacted.

TRANSPARENCY, COMMUNICATION AND PUBLIC ENGAGEMENT

50. *Is publicly-funded research informing policy development being published?*

51. The MTHR programme was established in 2001, and is now drawing to a close. It is expected to report at the end of the Summer in 2006. It is to be hoped that the publication and findings of the various studies within the programme will be considered before any changes to policy or public advice on mobile phone use or network development are made. Changes that do not reflect scientific evidence and advice will further undermine public confidence in science.

52. The MTHR Programme Secretariat has proposed a second phase of the programme. The UK mobile operators, as part of their responsible approach to the mobile phone and base station health issue, have held discussions with the Secretariat on funding for phase two. However, there has been little further development on this since discussions opened in 2005. The operators believe that it is important that the second phase of the MTHR programme moves forward with a minimum of delay. However, there also needs to be significant financial input from the Government and other sections of the mobile phone industry for this to happen.

January 2006

APPENDIX 15

Memorandum from Cancer Research UK

1. INTRODUCTION

1.1 Cancer Research UK is the world's largest independent cancer research organisation, with an annual research spend of over £217 million. Cancer Research UK funds research into all aspects of cancer from exploratory biology to clinical trials of novel and existing drugs as well as population-based studies and prevention research.

1.2 Scientific advice does not only include the results of research studies published in scientific journals. It also includes the opinion of experts and impact assessments submitted to Government in response to consultations, or during the development of legislation, public health, or health service initiatives.

⁵² “*Common sense culture not compensation culture*”, Speech to IPPR, 26 May 2005.

1.3 Cancer Research UK provides advice to the Government and relevant Departments on the drafting of appropriate legislation governing the regulation of medical research. Most recently this has included clinical trials and human tissues. We have also responded to consultations on Government initiatives to promote science and innovation in the UK, and a new strategy for Research and Development in the NHS.

1.4 Cancer Research UK also provides evidence to Government on public health initiatives. We have provided extensive data on the effects of smoking and second-hand smoke, the link between cancer and obesity, and our experts have been closely involved in shaping the Government's current national screening programmes.

2. CANCER RESEARCH UK'S POSITION

2.1 We believe that consistent principles should apply when seeking advice on drafting legislation, developing public health initiatives, and addressing service delivery issues.

2.2 We strongly endorse the current Office of Science and Technology guidelines on Scientific Analysis in Policy Making. Government departments and individual policy makers should ensure:

- Adequate horizon scanning;
- Evaluation of current evidence, and commissioning additional research;
- Involvement at an early stage of all appropriate stakeholders; and
- Publication of all evidence, analysis and appropriate papers.

2.3 *Adequate horizon scanning*

2.3.1 Horizon scanning is key to the appropriate use of scientific advice. In two recent examples of European legislation, the EU Directives on Clinical Trials and on Physical Agents, the UK has been ineffective in horizon scanning. Both pieces of legislation had the potential to make a significant impact on medical research. The strong impression across the medical research community is that the Government and its departments were either too late entering the debate on this legislation or not adequately aware of the potential impact of these Directives.

2.3.2 Cancer Research UK recommends evaluation of how the UK Government undertakes horizon scanning at both the UK and European levels, and how they might best involve all stakeholders in such policy development.

2.4 *Evaluation of current evidence and commissioning of research*

2.4.1 An essential next step following horizon scanning is the identification of areas where the evidence base is inadequate and should be strengthened. This is crucial to future policy making and especially important in planning health care and cancer services. Recent reports on shortages within radiotherapy provision highlight the need to plan now and identify the areas on which we need to focus in the future.

2.4.2 We would like to see the Committee address the amount and focus of research that is undertaken within Government departments to inform policy making. There is concern that before we ask whether the Government uses scientific advice appropriately we should first question whether the right research is commissioned to give the answers policy makers need to make their decisions.

2.5 *Involvement of all appropriate stakeholders at an early stage*

2.5.1 It is essential that Government departments access advice from a sufficiently wide range of experts, both within and outside Government. It is important that the Government receive a balanced view and hear from all those with an interest in the issue. This can only be adequately achieved by finding the right people to be involved in the process, and by ensuring that the appropriate questions are being asked.

2.5.2 Seeking and understanding scientific advice is not a passive process, and the Government should be actively engaging with stakeholders in order to evaluate the weight of their views in the argument. Discrepancies between scientific advice and policy making have recently been evident in Government decisions on public health initiatives.

2.5.3 We would like to see more emphasis from the Government and their departments on transparency in the process of obtaining and evaluating scientific advice and the inclusion of all relevant stakeholders in this process.

2.5.4 We would also like to see the Government develop a coherent strategy for engaging stakeholders in policy development at the European level.

2.6 Publication of all evidence, analysis and appropriate papers

2.6.1 The process of policy development is still not transparent, the results of consultations, although published, often do not bear much resemblance to the final policy.

2.6.2 Examples of this were seen in the development of the Human Tissue Act and implementing legislation for the European Clinical Trials Directive. Although there was consultation at the drafting stage the published legislation showed little evidence of being influenced by the submission.

3. CASE STUDY—THE USE OF MRI EQUIPMENT: THE EU PHYSICAL AGENTS (ELECTROMAGNETIC FIELDS) DIRECTIVE

3.1 Cancer Research UK shares the concern of our colleagues in the research community that this Directive could have an overly restrictive effect on both cancer treatment and clinical research. We do not believe that the proposals for new legislation make clear the hazard which this legislation is hoping to prevent.

3.2 We believe that the limit levels proposed by the Directive limiting staff working in the “switched field” have little or no basis in scientific evidence. Medical staff are required to work in the switched field both for interventional procedures such as biopsy, intravascular procedures, or testing new therapies, or for providing care to the patient.

January 2006

APPENDIX 16

Supplementary evidence from the Government

SCIENTIFIC ADVICE, RISK AND EVIDENCE: HOW GOVERNMENT HANDLES THEM

Answers from Sir David King, Government Chief Scientific Adviser and Ms Sue Duncan, Chief Government Social Researcher to Committee questions following the oral evidence session on 15 February 2006, [HC 900-i].

QUESTION 1

In oral evidence Ms Duncan referred to the Professional Skills for Government (PSG) initiative [Q11]. Please explain how PSG will improve the use of scientific evidence (including social science) by policy makers and the professional development of scientists within the civil service. What other steps are being taken to improve opportunities for scientists within the Civil Service [Q14]?

1. Improving the use of science and social science evidence requires action to address both the supply and demand issues. The Professional Skills for Government (PSG) initiative aims to address both. On the demand side, one of the core skills policy makers are expected to demonstrate is “analysis and use of evidence” (A + UE). This should significantly improve the use of all types of evidence, including scientific evidence, by policy makers.

2. The requirements associated with the A + UE skill were developed by a small team that included representation from “analytical” professions within government. The “Scientist/Engineer” profession was represented, as were, for example, social researchers, economists and statisticians. Should they be required, a full list of the requirements associated with the A + UE core skill may be found on the Cabinet Office’s PSG site⁵³.

3. One part of the A + UE skill at the Grade 7 “career gateway” involves “engaging with relevant experts to gather and evaluate evidence”. Since A + UE is a core skill, all civil servants at Grade 7 and above should be demonstrating this behaviour. Furthermore, as people progress through the PSG career gateways, they have to demonstrate real development in this area. They are required to move from “using” and “understanding” evidence to “championing” the role of analysis and evidence.

4. It is as yet unclear what the response to developing this core A + UE skill is likely to be, and what the appropriate balance between courses and on-the-job learning is, in acquiring the skill.

5. PSG emphasises that everyone in the civil service now belongs to a professional group and clearly puts the responsibility for developing professionalism (which includes core policy and business skills alongside analytical skills) in the hands of the relevant Heads of Profession. Different groups are at different stages in this process, but Heads of Profession meet regularly to discuss progress and share best practice.

⁵³ <http://psg.civilservice.gov.uk/>.

Science/Engineer Profession

6. The creation of the “Scientist/Engineer” profession within the PSG framework clearly puts scientists and engineers on the same footing as all other professional groups. It should no longer appear as a “specialist” profession, with an implicit limit on the level that its members can reach. Integrating the profession into a civil service wide initiative also highlights the opportunities that exist for scientists and engineers to progress into the SCS and, furthermore, PSG clearly defines the skills and experience that are needed to achieve this.

7. The Skills Framework (SF) for the Scientist/Engineer profession, and the associated Learning and Development document, will also aid the professional development of scientists and engineers. For example, these documents highlight the importance of Continuing Professional Development (CPD), especially that leading to a professional qualification (eg Chartered Engineer and/or Chartered Scientist).

8. These documents also highlight the importance of being able to provide clear advice to technical and non-technical audiences, and of understanding the needs and constraints of stakeholder communities. These skills should further improve the interface between policy makers and the analytical professions.

9. As discussed above, the introduction of PSG has improved the opportunities available to civil service scientists and engineers. Sir David King’s role as the government-wide Head of Science and Engineering Profession (HoSEP) also supports this aim. Working with departmental heads of profession, he aims to publicise the breadth of work conducted by the science and engineering community, which will help individuals identify future opportunities. He will also be launching a web site that, amongst other things, contains a high-level discussion of the various career paths open to scientists and engineers. The description of this framework is enhanced by a number of example jobs that have recently been advertised on the Civil Service Recruitment Gateway. Current plans are for the web site to go live during May 2006, this date being driven by changes to the overall Department of Trade and Industry web site, of which it forms a part.

10. The ongoing programme of Science Reviews, which are conducted by officials in the Office of Science and Technology (OST) on behalf of the Government Chief Scientific Adviser, also contribute to improving the opportunities for civil service scientists. In particular, one of the criteria they examine is how departments “use, maintain and develop scientific expertise”.

Social Research Profession

11. To further embed the principles of PSG, a common competence framework for members of the Government Social Research service has been developed, setting out the requirements for each grade. This is soon to be complemented by a Continuing Professional Development Handbook that introduces a minimum number of hours of CPD required by GSR members, and assists them in assessing their current level of competence, and identifying training and other professional development activities that they can undertake in each area. GSR has also just launched its Fast Stream programme for existing GSR members, which is intended to identify and develop the talent of GSR members with potential to progress to the Senior Civil Service. Fast Stream schemes for economists and statisticians already exist.

QUESTION 2

Ms Duncan stated that she had “no role specifically in advising ministers” and that the Chief Economist was her line manager [Q1–2]. Does the Government Chief Economist have a role in advising Ministers and the Prime Minister on social science issues, or does all responsibility for providing cross-departmental advice on social science lie with the Government Chief Scientific Adviser?

12. There are a number of mechanisms for providing cross-departmental advice on social science ranging from informal liaison by the central chiefs of social science professions through to formal reviews of cross-departmental policy areas. One of the reasons for establishing the Coordination of Research and Analysis Group (CRAG), was to ensure more effective coordination across the analytical and policy communities in both anticipating and responding to cross-departmental challenges.

13. The Head of the Government Economic Service, as well as being a member of CRAG, supports and guides departmental Government Chief Economists, who do have a direct role in advising ministers on social science issues, and who meet regularly to discuss cross-cutting issues. He is available to give advice to any minister, should that be requested. Sir Nicholas Stern, as well as being Head of the GES, is, in his other capacity, an adviser to the UK government on the Economics of Climate Change and Development, and is currently leading the Stern Review on the Economics of Climate Change.

QUESTION 3

Sir David indicated that the Office of Science and Technology fulfilled the same function as the Government Social Research Service, Government Economic Service, Government Statistical Service and Government Operational Research Service [Q12]. Could you please explain the rationale behind this statement and clarify why there are Government Services for social science disciplines but not for the natural or physical sciences, engineering and technology?

14. The rationale behind this statement is that the Office of Science and Technology (OST) shares the same high-level aims as the organisations listed in the question. For example, part of OST's work is about ensuring that the work of scientists and engineers is integrated into the policy making process. Its work also involves supporting and championing the scientific and engineering community.

15. A number of the organisations identified in this question are involved in the recruitment of members of their profession. They are also highly active in areas like the provision of individual training courses.

16. While, in common with other analytical professions OST works with other government departments, OST does not work directly with individual members of the science and engineering community, whose professional development is managed at a Departmental level. By helping departments write Science and Innovation (or Evidence and Innovation) strategies, and encouraging the use of Horizon Scanning (HS) techniques, OST helps departments to identify the science and engineering capabilities they need to support their business. In short, amongst other things, OST tries to help departments better manage their own science and engineering communities.

17. The topic of Continuing Professional Development (CPD) provides a good example of how this works in practice. In Sir David King's role as Head of Profession for scientists and engineers, he has stated that, in most cases, CPD that leads to a professional qualification like Chartered Scientist (CSci) or Chartered Engineer (CEng) should be undertaken. However, he has not dictated that this must be achieved in a particular manner.

18. At least 16 different professional bodies can award CSci status⁵⁴. As might be expected, these include the Institute of Physics, the Royal Society of Chemistry and the Institute of Mathematics and its Applications. A number of more specialist organisations including, for example, the Oil and Colour Chemists' Association, the Institute of Corrosion and the Institute of Professional Soil Scientists, can also award the qualification. The choice of a specialist, or more general, route to chartered status is clearly best made locally, where the needs of the individual and their employing organisation are understood much better.

QUESTION 4

Sir David stated: "the role of the Chief Scientific Adviser is to report to the Prime Minister and the Cabinet and yet my office is in the DTI. I think that tension exists and I feel it many days of the week" [Q13]. What steps you have taken to mitigate this problem and how will the new arrangements at the OST and DTI impact on this?

19. There are benefits as well as challenges in the current arrangements. As the Government's Chief Scientific Adviser, Sir David King values being able to draw readily on the work of the Science and Engineering Base and Innovation Groups in the DTI, and to work closely with the Secretary of State for Trade and Industry and the Minister for Science and Innovation. Having his office in the DTI sends a clear signal internally and externally that the DTI is indeed the "Department for Science". At the same time he ensures that his links to the centre of Government are strong: Sir David meets the Prime Minister and his staff, as well as the Secretary of the Cabinet and other Cabinet Office officials, regularly. It is well understood and accepted by DTI colleagues, including Ministers, that Sir David advises the Government independently. The merging of the DTI's Innovation Group into the Office of Science and Technology to create the Office of Science and Innovation, which Sir David King will continue to lead, will not change that position; however it will mean that science and innovation policies will be better integrated, and carry more weight, within the DTI.

QUESTION 5

Sir David stated that he was not confident that all departments had sufficient scientific expertise to respond to unforeseen challenges [Q25]. Which are the key areas of weakness, in terms of departments, processes and policies, which need to be addressed?

20. One of the key recommendations of the 2002 Cross Cutting Review of Science and Research (CCR) was that Departments publish Science and Innovation (S&I) Strategies, which are proposals for meeting defined S&T policy objectives and goals.

21. The Strategies should show how they relate to and contribute to departmental priorities, objectives and relevant Public Services Agreement (PSA) targets. They also aim to identify and meet the strategic public policy challenges across Government, which undoubtedly require input from a wide range of analytical resources.

⁵⁴ http://www.sciencecouncil.org/chartered_scientist/licensed_bodies.html

22. CSA's Guidelines call for adequate horizon scanning procedures to be in place in Departments and S&I strategies to ensure that these procedures are exploited in support of scientific evidence and understanding of technological innovation. This should form part of the solution to crosscutting public policy issues that may affect future policies.

23. Horizon scanning is intended to help reduce the impact of unforeseen challenges by identifying public policy challenges; sourcing data across all evidential areas; and identifying the opportunities, threats and key scientific issues the department will need to address for the longer-term. Horizon scanning should provide early indications of trends, issues, or other emerging phenomena that may create significant impacts that departments need to take account of.

24. While the key elements of the S&I Strategy documents, such as horizon scanning; risk management; skills strategy; and public engagement, cover the issues of capacity and capability, the key areas of weakness tend to be the lack of coherent systems for co-ordinating these elements.

25. The ability to retain, fund and develop scientific expertise for unforeseen challenges is a real issue for Departments. The need to fund, retain the expertise, and constantly update the skills is an equation that is rarely truly resolved. (This is based on Science Review experience.)

26. Most Departments are responsible for a wide range of policy areas, each requiring specialist scientists, and while these departments build generically on the experience of their past responses to emergency situations, extrapolating learning from one to inform the next crisis, they cannot fully predict the nature of the scientific expertise required for the next emergency.

27. *Processes*: the second part of the question asks which are the key areas of weakness in terms of departments processes and policies, which need to be addressed?

The Horizon Scanning Centre (HSC) was established in November 2004 to provide a higher-level strategic context to horizon scanning in departments, and to feed directly into cross-government priority setting, strategy formation and decision-making. Horizon scanning helps a Department look beyond the day-to-day operational priorities, to identify potential changes in science and social science, (for example, dealing with the perception of and attitude to science) and make provision for planning responses to these. OST's experience suggests that within Departments there is not yet a common embedded view of what horizon scanning is, how and where it is applied, and what part it plays in business processes including strategy and risk management. However, the Horizon Scanning Centre within OST is aware of these developmental issues, and has a Strategic Futures coaching and support programme open to all Government Departments with the aim of raising the capacity for horizon scanning within Government Departments and spreading good practice.

28. In the last 12 months, the coaching and support programme has involved 78 individuals from eight Government Departments and a wide range of agencies, devolved administrations and other public sector bodies. The Horizon Scanning Centre has an on-going process of engagement with the private sector to seek lessons and good practice that can be applied in Government. However, horizon scanning, as an activity across Government, is fairly new and the activity is not yet well embedded in strategic processes in all Departments.

29. The Horizon Scanning Centre also runs a Best Practice network (the Futures Analysts Network, known as the FAN Club) whose quarterly meetings attract around 60–70 people from all sectors, both public and private.

30. As well as expecting a Department to take a view of the future, OST's Science Review Team also looks at the extent to which a Department looks beyond its own organisation to identify unforeseen challenges, and areas where the necessary expertise may already exist elsewhere. This includes working with, and being aware of expertise in academia, OGDs and internationally.

31. Departmental strategies tend to concentrate on issues for which a department has lead-responsibility, so cross-departmental issues may receive less attention. One response to this structural weakness is the work of the OST's Foresight Directorate whose criteria for prioritising and selecting potential projects include the requirement that they should involve cross-Departmental policy issues.

32. There are in addition network mechanisms—some informal and others systematic—where Departments have access to expertise. R&D programmes dedicated to Departmental policy areas create—through R&D contracts—extensive networks of external experts. Many Departments also have access to expertise in their own science agencies, who in themselves are engaged in extensive topic focussed networks. Departments are also often invested deeply in relationships with specific research institutions (eg research council institutes) which gives them access to external institutional expertise. Some of these relationships are expressed through formal memoranda of understanding. Departments may also have access to scientific advisory committees that include leading experts, often engaged on advisory functions of an anticipatory nature. Departments may also have formal relationships with international expert committees and panels. The nature of such network mechanisms necessarily results in Departments with greater R&D budgets and science focussed policy areas having a higher level of ready access to both internal and external expertise.

QUESTION 6

Sir David stated that “the Treasury leads on managing risk” and Ms Duncan noted that the Treasury had provided guidance on risk appraisal [Q76]. Who is responsible for monitoring the implementation of this guidance by departments and how is this co-ordinated with the Science Reviews led by OST?

33. “Managing risks to the public: appraisal guidance” was published on 17 June 2005 following wide consultation. What the document does is provide departments with the flexibility to take judgments on the management of risk which are related to their particular circumstances.

34. Monitoring of implementation is the responsibility of the Treasury.

35. Monitoring is not co-ordinated with the Science Reviews as the guidance is designed for policy makers across all government and not specifically for those working on scientific policy. It is nevertheless the case that the ten criteria that underpin Science Reviews include several which address risk at the strategic and operational level. In particular, the Reviews test for implementation of Guidelines 2005 and the Code of Practice for Scientific Advisory Committees.

QUESTION 7

Sir David referred to a table of relative risks produced by the life insurance industry [Q77]. Is this table, or an analogous framework, used by Government for risk communication? If not, why not? If so, please provide further information on how it is used.

36. The Government has not developed a standardised table of risks; risk means different things to different people. Looked at from one perspective an individual may have a better sense of their own personal risk than Government as the Government looks at risk in aggregate across the population as a whole. For example, someone who does not drive when tired or drunk and always drives cautiously could reasonably assume that their level of risk is different to the aggregate average level of risk. On the other hand people do not tend to have a very analytical approach to personal risk but rather make judgements based on the way they feel.

37. What Government does provide is guidance on managing risks to the public for policy makers and professional risk assessors. The Government has also developed guidance on communicating risk, which is published on UK Resilience web site. This gives guidance to communicators and policy makers on the types of risks people face and a set of principles for communicating on risk based issues. <http://www.ukresilience.info/preparedness/risk/communicatingrisk.pdf>

QUESTION 8

Sir David made reference to the Prime Minister’s initiative to improve media handling of risk, formerly led by John Hutton [Q80]. Please provide information on who is now leading this initiative, what activities have been undertaken and what further activities are planned.

38. There have been useful discussions with the broadcast media about handling risk and there are plans for the Chief Scientific Adviser, Chief Medical Officer and the Permanent Secretary for Government Communications to continue the dialogue with the print media over the next few months.

QUESTION 9

Sir David indicated that he considered the idea of a precautionary principle to be “unscientific”, preferring to refer to a precautionary approach [Q87]. Please define what is meant by a precautionary approach and explain the steps that you have taken to promote the use of a precautionary approach (as opposed to principle) across Government.

39. The precautionary approach is consistent with wider risk management practice. It applies where the scientific evidence is incomplete or inconclusive, and there is the possibility of severe and irreversible consequences. It simply allows for a further judgment to be made, alongside a more standard cost-benefit analysis, to enable policy makers to justify resource investment in risk prevention/minimization in these circumstances.

40. Each individual case has to be fully examined on its merits, taking into account relevant risk management principles such as proportionality and consistency. It is clearly difficult to define whether proposed action is “proportionate” when the science is uncertain. Central advice for Departments seeking to take precautionary action to mitigate perceived risk is therefore provided in the Treasury Guidance “Managing risks to the public: appraisal guidance” (p 17) which supplements the Treasury’s Green Book guidance “Appraisal and Evaluation in Central Government”. The guidance identifies precautionary action as one of several possible options for the management of risk—including delay and allowing more time for investigation of alternative, less damaging ways for achieving stated objectives. The guidance directs appraisers to draw the matter to the attention of senior management and seek expert advice.

QUESTION 10

Ms Duncan said: "my understanding is that [the Cabinet Office] do not any more monitor the way departments implement the guidance" on best practice for consultations [Q93]. Please confirm that this is the case.

41. The Cabinet Office does still undertake some monitoring of departmental compliance with the Code of Practice on Consultation through its annual Assessment of Performance. (<http://www.cabinetoffice.gov.uk/regulation/consultation/index.asp>)

23% of the 621 consultations by departments in the 2004 calendar year lasted less than 12 weeks. Where consultations do not meet the 12 week minimum, require ministerial sign-off explaining the reasons and are expected to take extra effort to ensure that the consultation is as effective as possible. Of those consultations that lasted less than the 12 week period, all but 5 received Ministerial approval and were therefore compliant with the Code. Reasons given for non-compliance have included pressure of European timetables, stakeholder pressure for quick action, and the need to dovetail with the parliamentary scrutiny timetable. From 2005, departments are required to state, in the better regulation section of their annual reports, the reason why Ministerial approval is given for consultations lasting less than 12 weeks.

QUESTION 11

Sir David said that he speaks "on behalf of the advisory system within Government" [Q97]. Please clarify what the term "advisory system" refers to and which Minister has ultimate responsibility for the scientific advisory system in Government.

42. The term "advisory system" refers to the analytical advice provided by Government analysts to decision makers (usually Ministers). Sir David speaks on behalf of the scientific community within this system. Other chief analysts (such as the Chief Economist and Chief Social Researcher) provide advice on behalf of their own analytical communities. The way in which this advice reaches decision makers varies according to discipline and department.

43. Chief analysts and senior policy makers meet regularly through CRAG to ensure more effective coordination across the analytical and policy communities, and to ensure that Government is in a better position to anticipate and respond to where such advice is likely to be needed.

44. Lord Sainsbury (Parliamentary Under-Secretary of State for Science and Innovation, DTI) is the Minister who has the lead on the science agenda. However, due to the high profile and sensitive nature of science, Sir David King, as the independent GCSA, has the lead in this area and provides advice directly to the Prime Minister.

QUESTION 12

Are there any general criteria for the selection of departmental chief scientific advisers? What guidance has been issued to departments regarding the experience and skills profile that they should be seeking in a departmental chief scientific adviser?

45. The role of a Departmental Chief Scientific Adviser (DCSA) was first developed in the "Cross-Cutting Review of Science and Research", which published a final report in March 2002.⁵⁵ This identified the following aspects of a DCSA's role:

1. Ensure that policy is soundly based on good science.
2. Provide strategic direction to the department's scientific activities.
3. Be the department's scientific spokesman to the outside world.
4. Be credible, both within and outside the department.
5. Have direct access to the department's board.
6. Accountable for the level of scientific expertise in the department.
7. Ensure that staff complete appropriate continuing professional development.

46. Whilst the general nature of the role is the same across government, different departments do emphasise those parts that are most relevant to their business. They also recruit a DCSA whose area of expertise best matches the work of the department. For example, as Sir David King stated in his oral evidence, Paul Wiles, the Home Office DCSA is a social scientist.

47. To ensure that appropriate criteria are applied across government, Sir David is involved in the appointment of all DCSAs. This involvement often includes providing comments on job advertisements and forming part of the interview panel.

⁵⁵ Specifically paragraphs 249 to 258, inclusive.

QUESTION 13

Are the numbers of natural and physical scientists and engineers employed by Government rising or falling (please provide details for the last five years if possible)? What impact has the Gershon review had on numbers of in-house scientists?

48. There are no accurate figures that can be used to provide a quantitative answer to this question. Since the disappearance of the scientific civil service there has been no central record on the number of scientists and engineers employed. Anecdotal evidence suggests that the situation has been exacerbated by individuals in more general civil service jobs hiding their scientific skills as they viewed them as an impediment to promotion.

49. The introduction of PSG and the formation of the Government Skills Sector Skills Council offer at least some hope that this situation will improve. In particular, PSG requires individuals to select a professional grouping and Government Skills need to collect workforce data. The combination of these requirements might in the future lead to a situation where departments (and their agencies) are asked report on the number of staff within each profession.

50. As Sir David mentioned in his oral evidence, the privatisation of agencies and laboratories is reducing the scientific expertise that is available within the civil service. The privatisation of part of what was the Defence Evaluation and Research Agency (to form QinetiQ) and the Laboratory of the Government Chemist are but two recent examples. Ongoing changes to the status of the Forensic Science Service are another case in point.

51. Whilst it is accepted that there are “local issues” associated with the cost-effective provision of services to a department, the ability to exploit Intellectual Property (IP), the opportunity for commercial activities, and the need to achieve efficiency savings, the continuing reduction of scientists and engineers in the civil service is a concern to Sir David.

52. It may, for example, reduce the number of technically qualified people who are able to act as “intelligent customers” when the government procures scientific or engineering expertise from external organisations. This area was highlighted in the Gershon Review,⁵⁶ albeit the examples used were of consultancy, legal services and financial advisory services, rather than scientific or engineering expertise.

53. The upheaval and uncertainty associated with these changes may also reduce the appeal of a career in the civil service. The reduction in the number of scientists and engineers that are employed within the civil service also reduces the size and diversity of the talent pool from which future generations of the SCS will be drawn.

QUESTION 14

What incentives has the Government put in place, for both researchers and civil servants, to promote interaction between scientists and policy-makers?

54. There are a number of activities associated with PSG that will promote interaction between policy makers and members of the Scientist/Engineer profession. For example, the requirements associated with the Analysis and Use of Evidence core skill (which is discussed in more detail in the response to Question 1) mean that civil servants need to understand evidence and to engage with relevant experts. Whilst this captures the interaction between policy makers and scientists it is much wider in its remit, covering all civil servants at Grade 7 or above and all forms of evidence.

55. In addition, the Skills Framework associated with the Scientist/Engineer profession requires members of the profession to “provide clear advice to technical and non-technical audiences”, and to “understand the needs and constraints of stakeholder communities”. These skills should further improve the interface between policy makers and members of the Scientist/Engineer profession.

56. Furthermore, PSG requires that members of the SCS have “broader experience” of working in government. This means that they must have had meaningful experience of working in at least two of the following three areas: policy delivery; operational delivery; corporate services delivery. It is hoped that this will increase the proportion of the SCS that have detailed, hands-on experience of working with scientists and engineers.

57. A number of departments have introduced local initiatives that seek to improve the interaction between policy makers and scientists. For example, the Department for Environment, Food and Rural Affairs has restructured so that, in some cases, scientists work in the same organisation teams as policy makers. The Chief Scientific Adviser’s Committee (CSAC), chaired by Sir David King, offers an opportunity for departmental Chief Scientific Advisers to share their experiences of such initiatives, thus facilitating the spread of “best practice”.

⁵⁶ “There is little evidence that the procurement of professional services (for example consultancy, legal services, financial advisory services) is managed to ensure value for money.” Third bullet under paragraph 3.24 of “*Releasing resources to the front line. Independent Review of Public Sector Efficiency*”, Sir Peter Gershon, CBE, July 2004.

58. The Co-ordination of Analysis and Research Group (CRAG) was established in December 2004 to promote closer interaction between policy experts and the full range of analytical disciplines within government. It is chaired by Sir Brian Bender, Head of Profession for Policy Delivery, and its members include the central heads of science and analysis professions and high level policy and strategy representatives. CRAG is currently facilitating cross-cutting, evidence-based work on migration, globalisation, ageing and public policy and service delivery with the aim of addressing key gaps and tackling problems such as data sharing.

59. The Professional Skills for Government Initiative (PSG) requires that all middle and senior management officials—be they policy experts or policy analysts—are able to demonstrate an understanding of analysis and to use evidence effectively. As this requirement will form part of the annual reporting and performance management cycle it should motivate policy experts to gain a better understanding of basic research methods and, at the same time, encourage policy analysts to learn more about the political context in which they are working.

60. Several government departments are experimenting with multi-disciplinary teams in which analytical specialists and policy experts are located together and work side by side on policy development. DfT, for example, has already evaluated the first phase of its “flexible deployment” trial.

61. Within GSR, a large amount of research activity is commissioned from external research contractors. Contract managers are expected to ensure effective interaction between external research contractors and policy sponsors for projects. Departmental Heads of Profession for GSR have oversight of these relationships at a strategic level.

QUESTION 15

What processes are in place for horizon scanning of issues emerging from the EU? What steps are taken to ensure that issues that could be of concern to UK scientists or that could benefit from their input are identified as early as possible?

62. There are a number of existing mechanisms for Horizon Scanning issues emerging from the EU, although there is no overarching coordinating framework that draws them all together.

- On the regulatory side, the CSA Guidelines lay out where and how scientific expertise and advice integrates in policy processes, including guidance on Horizon Scanning. This integration compliments the Better Regulation Executive’s (BRE) guidance on the Regulatory Impact Assessment (RIA) which is an analysis of the full range of likely impacts of a policy change. These sets of guidance cover approaches to EU policy areas as other areas.
- On anticipating issues where there is a research need that has a European dimension, the UK negotiates from a forward looking perspective based on intensive stakeholder consultation on priorities for forthcoming EU R&D framework programmes.
- CSA Guidelines, BRE Guidance, and the Professional Skills in Government programme (particularly elements relating to evidence and analysis) define the skills and processes required for good use of evidence (including scientific evidence) generally, which would include consideration of UK negotiating positions on forthcoming EU legislation. They also offer specific guidance on S&T horizon scanning to encourage the identification of S&T issues where early S&T inputs would be beneficial.
- The CSA Guidelines give specific advice on seeking out wider S&T inputs to from external sources, for example engaging learned societies and professional bodies to access a wide range of specialists.
- The CSA guidelines recommend stepping through a number of processes to achieve early warning of S&T issues, such as seeking external advice when an issue raises questions that exceed the expertise of in-house staff; when responsibility for a particular issue cuts across government departments; when there is considerable uncertainty and a wide range of expert opinion exists; when there are potentially significant implications for sensitive areas of public policy; when independent analyses could potentially strengthen public confidence in scientific advice from government.
- In terms of seeking EU expertise, the CSA guidelines state that “where appropriate, consideration should also be given to inviting experts from outside the UK, for example those from European or international advisory mechanisms . . . Where the issue falls within European Community competence, or is likely to affect intra-community trade, particular attention should be paid to encouraging an evidence-based approach for Community decision making. This may involve contributing to Community level scientific committees, briefing the Commission on developing expert opinion, and exchange visits by scientific experts from other Member States . . .”. A number of UK laboratories are Community reference laboratories, and play a leading role in setting the EU agenda (for example on testing protocols) in specific areas of science. UK experts are involved in advisory roles for UK representation on EC standing committees with strong science components, such as the Standing Committee on the Food Chain and Animal Health.

- The UK has numerous independent expert advisory committees, many of whom give advice on EU issues. Their role—whilst not formally defined as such—has a strong element of Horizon Scanning for S&T issues.
- Within the EC there are numerous specific Foresight and Horizon Scanning activities. DG Research coordinate many of these activities, having set up the “Science and Technology Foresight” unit in January 2001. Apart from “embedded” S&T Foresight in multilateral research infrastructures like CERN and EMBL, Foresight and supporting activities have been developed principally by *The European Parliament and The European Parliamentary Technology Assessment Network*, EPTA. EPTA networks Parliamentary Technology Assessment bodies of Europe, which includes the UK’s Parliamentary Office of Science and Technology (POST). Other significant S&T Foresight activities in Europe include the Institute for Prospective Technological Studies (IPTS) in Seville, which provides techno-economic analysis to support European decision-makers. The European Science Foundation (ESF) recently introduced its “Forward Look” to assist Europe’s scientific community to develop medium to long term views and analyses of future research developments in multidisciplinary topics, and interact with policy makers from member organisations.
- DG Research’s Science and Technology Foresight unit also act to implement the actions relevant to S&T Foresight under the “Support for the coherent development of S&T policies” of the 6th EU Framework Programme for Research. The 6th Framework programme also has a Foresight element under “coordination of policies” work programme.
- DG research state “it is apparent that Foresight activities themselves have not yet reached the same state of integration and coherence at EU level as many other policy fields”. This is likely to be a reflection of the level of development of Foresight and Horizon Scanning skills across the European generally, and is reflected in the UK also in the relative youth of Guidelines for embedding such tools and skills such as CSA Guidelines, and PSG.
- OST’s Foresight Directorate carries out in-depth analyses looking ahead at least 10 years (and often further) on the future implications of key areas selected on the basis of being driven by science and technology, having outcomes that can be influenced (ie the work adds value), are not being covered by work carried on elsewhere, require an inter-disciplinary approach, and command support from departments.
- The OST Horizon Scanning Centre (HSC), which commenced activities in November 2004 (under a commitment in the HMT/DTI/DFES 10 year science and innovation investment framework) takes a global perspective of future trends and issues, in the context of impacts on the UK. European issues are encompassed in the context of the HSC’s remit on Horizon Scanning evidence, which is to provide a higher-level strategic context to the Horizon Scanning activities of other departments.
- It also has a “best practice” workstream, which looks across Government and widely across the private sector, in order to seek out, test, and promote good practice in Horizon Scanning. The HSC is also piloting a coaching programme to raise capacity to undertake Horizon Scanning across Government. The HSC also has a programme of strategic S&T Horizon Scanning, where issues are prioritized by impacts on the UK. This provides a high-level strategic context to the Horizon Scanning activities of other departments. The HSC has created an active “Future Analysts Network” which puts on events on specific Horizon Scanning techniques or topics, some of which raise awareness across Government of specific important S&T areas. The network draws deliberately on both public and private sector expertise (local and international) and membership in order to maximize synergies and value.

QUESTION 16

How is the effectiveness of cross-departmental policies that rely on or have implications for science evaluated?

63. The 2002 Cross-Cutting Review of Science and Research (CCR) represented the first major review of the effectiveness of government’s use and management of science and research underpinning the development of government policies.

64. Much progress has been made since the Cross-Cutting Review, including the development of the 10-year Framework for Science and Innovation published in 2004. OST, SI (DTI) and DFES report annually to HM Treasury on progress against measures and indicators contained in the 10-year Framework.

65. Most Departments have completed and published science and innovation strategies, or are very close to doing so. In providing their S&I Strategies, Departments explain their systems for identifying and meeting the strategic public policy challenges they face. Departmental Chief Scientific Advisers (DCSAs) have been appointed to nearly all the Departments where they are needed, and are making positive impacts on the quality of policy-making as their roles develop.

66. Following the S&I Strategies, OST’s Science Review team conducts more detailed analysis and evaluation of how individual departments manage their science and use science in support of policy.

67. In response to the Ministerial Committee on Science and Innovation (SI), in September 2005, OST led the identification of three Grand Challenges that bring scientific evidence to bear in cross government policies. Each challenge currently being developed by lead departments who will report back to SI.

68. In 2005–06, HM Treasury's Comprehensive Spending Review (CSR) has further emphasised crosscutting policy priorities requiring input from a wide range of analytical resources through inter-Departmental collaboration, thus reinforcing the importance of improved and effective cross-departmental workings. There is increasing co-ordination and prioritisation of cross government policies by the Coordination of Research and Analysis Group (CRAG) and the Chief Scientific Advisers Committee (CSAC).

69. OST and CRAG have been working closely with HM Treasury to develop analysis and evidence to underpin CSR objectives that should support future evaluation of cross-departmental policies.

QUESTION 17

What processes are in place to ensure that once a policy has been decided on and/or implemented, it is re-evaluated as new evidence emerges?

70. The Spending Review process led by the Treasury requires departments to review and justify the evidence base for their investment across policy and programmes on a regular basis.

71. At the individual policy level, the Better Regulation Executive's guidance on regulatory impact assessments states that officials must be clear on how they intend to review new policies and that a post-implementation review should:

- establish a baseline and include success criteria against which the effectiveness of the policy in delivering the desired outcome can be assessed,
- describe how and when the review will take place and say which elements of the policy it will cover,
- check whether the policy objective has been met, whether the impacts were as expected and whether there have been unintended consequences; and
- include criteria for modifying or replacing the policy if necessary.

72. GSR members are expected (as set out in the GSR competency framework) to support this process by fulfilling a research intelligence role. This involves keeping abreast of research evidence in their policy area and ensuring policy colleagues are briefed on emerging evidence. They also work in partnership with other social science analysts to monitor and evaluate policy and delivery.

QUESTION 18

What steps are taken to ensure that the results of pilots and trials are incorporated into policy development and what roles do the Government Chief Scientific Adviser and Chief Government Social Researcher play in making sure that this happens?

73. The *Adding It Up* report mentioned in the Chief Government Social Researcher's oral evidence called for more and better use of pilots to test the impact of policies before implementation. To support this, a review of government pilots was commissioned by the Government Social Research Unit and was published in December 2003 (Cabinet Office 2003: *Trying it Out: the role of Pilots in Policy-Making*). This report set out a number of recommendations on the appropriate role and properties of pilots, pre-conditions for success, appropriate methods and practices, and the use of results. While the Government Social Research Unit has no continued role in monitoring pilot activity, it continues to provide advice, support and training to departments in the design and execution of pilot evaluations.

QUESTION 19

Should research-based advice be published once a policy-decision has been taken?

74. Section 35 of the Freedom of Information Act (FOIA) recognises that there is public interest in ensuring that there is a space within which Ministers and officials are able to formulate and develop policy options freely and frankly and that some information and advice generated in the process should therefore be exempt from release. Information falling within the scope of the exemption is subject to the public interest test. It is necessary for departments to consider the balance between ensuring greater openness and transparency of the policy making process to better inform the public about the way Government works, whilst also protecting the policy making process, providing for effective government. Government departments must also pay regard to the potential application of other exemptions, for example those relating to national security or commercial interests and apply the appropriate tests within the legislation before releasing or withholding information.

75. Whilst a policy is in its formulation or development stage this section of the Act applies to statistical and social research information as well as to advice. However, once a policy decision has been taken, this section of the Act requires particular consideration be given to the public interest in disclosing factual information. This recognises that there is a particular public interest in making publicly available evidence that supports government policy decision-making. However there may be situations in which the factual and statistical information provided is integral to the advice process and it may not be appropriate (but this would be subject to a public interest and/or other tests) to provide this information in response to a request under FOIA.

24 March 2006

APPENDIX 17

Memorandum from the Centre for Crime and Justice Studies

1. INTRODUCTION

1.1 The Centre for Crime and Justice Studies (CCJS) at King's College London is an independent charity that informs and educates about all aspects of crime and criminal justice. We provide information, produce research and carry out policy analysis to encourage and facilitate an understanding of the complex nature of issues concerning crime. We are a membership organisation working with practitioners, policy makers, academics and students, the media and voluntary sector, offering a programme of events, publications and online resources. The Centre also owns the British Journal of Criminology, the world's leading English language academic criminology journal outside the United States.

1.2 CCJS publishes a quarterly magazine, CJM, for its members and separate subscribers, including academic libraries, voluntary sector organisations, criminal justice practitioners and the general public. The magazine has a long standing reputation for providing a unique combination of academic and practitioner based perspectives on a range of criminal justice and related issues. It is widely referenced in academic literature and used as a valuable resource on undergraduate and postgraduate masters courses.

1.3 The latest issue of CJM, (No 62 Winter 2005–06) is entitled "Uses of Research". Following publication in February it received widespread media publicity and CCJS was invited by the clerk of the Science and Technology Committee to submit a written memorandum setting out the background to the latest issue and some of the key arguments put forward in CJM. As the committee is receiving written and oral evidence from the head of the Home Office research department and Home Office ministers, CCJS was asked to focus on the criticisms and concerns raised by contributors to the magazine.

2. USES OF RESEARCH—THE BACKGROUND

2.1 When Labour came to power in 1997 it made a very clear commitment to "evidence-based" policy making across government and in particular, in criminal justice. This was summed up by Tony Blair when he declared "what matters is what works". The clear message sent out to academics and researchers was that the government wanted to use the application of knowledge to inform and determine policy making. After many years of what Tim Hope, Professor of Criminology at the University of Keele, describes in CJM as "having criminological research ignored, under-valued and under-funded by the Conservatives" the change in approach was widely welcomed.

2.2 Nearly ten years on, however, the experience of many in the academic community has not been what they had originally hoped. The Centre for Crime and Justice Studies had become acutely aware of this due to its close links with various academics. Well respected professors of criminology and criminal justice, supported by lecturers and researchers, felt that the government's wider political agenda on criminal justice had influenced the breadth and depth of criminological research commissioned and so was at risk of focusing narrowly on certain types of crimes and methodologies. They were also concerned that evidence was being ignored, simplified or misrepresented for political ends. Conversely, there were others who felt that current approaches to evidence based policy research had been extremely beneficial and were interested in exploring their merits and further development.

2.3 The role of CJM is to reflect issues that are topical and relevant within criminal justice and criminology. It was therefore felt that the magazine should focus on the issue of research and provide a platform for the debates over evidence-based policy making in criminal justice to be explored and made accessible to a wider audience. It is important to emphasise that the views expressed in the magazine do not necessarily represent those of CCJS.

3. USES OF RESEARCH—WHAT ARE THE MAIN CRITICISMS AND CONCERNS?

3.1 The Home Office has commissioned numerous research studies to evaluate the many schemes, programmes and projects that have been set up in recent years. But there is concern that officials and ministers can be selective in their choice of the evidence used to illustrate success of programmes thus resulting in the exclusion of some data and the misrepresentation of others. Tim Hope, Professor of Criminology at the University of Keele and a former member of the Home research department, has documented how this was his experience after evaluating the Home Office's Reducing Burglary Initiative. He shows that the Home Office highlighted only one of the research's cases studies in order to demonstrate that the initiative was effectively resulting in a reduction in burglary. Hope argues that there is an "incompatibility between the ideology of evidence-based policy and the natural inclination of the political process to want to secure the best outcomes" (see Annex for full article).

3.2 A further major concern is that a substantial increase in funding for Home Office research in recent years has led largely to a narrow focus on particular types of crime. Dr Reece Walters, Senior Lecturer in Criminology at the University of Stirling, and author of "Deviant Knowledge—Criminology, politics and policy" notes:

"Home Office criminology has a very clear purpose: to service the 'needs' of ministers and members of Parliament. It is politically driven criminology, one that provides policy salient information for politically relevant crime and criminal justice issues. It's research agenda is motivated by outcomes that are of immediate benefit to existing political demands—it is embedded criminology."

Walters highlights a study that examined research published by the Home Office between 1998 and 2003. It showed that none of the 571 reports looked crimes "committed as part of legitimate business activities".

3.3 Other academics, including Steve Tombs of Liverpool John Moores University, have criticised the way government funding has focused on street and domestic crime, leaving a huge gap in reliable data on other types of crime, such as corporate crimes. He argues that the 'slim' proportion of government funding that has been made available in the past to corporate crime research has been partly due to the "likelihood of the state's generally pathetic regulatory efforts being exposed".

3.4 Concerns about the Home Office's approach have not just been about the types of crimes that it has focused on. There is also unease about a preference for particular types of methodology based on an apparent hierarchy of valid social research methods. The Home Office increasingly prefers the use of Randomised Controlled Trials, large samples, quantitatively based approaches and quantitatively systematic reviews. Qualitative methodologies are considered to be less valid and so are less credible. However, academics including Loraine Gelsthorpe of the Institute of Criminology at Cambridge University, argue that this results in a greater focus on strategies to prevent crime and anti-social behaviour and to "control" rather than "correct" offending. There is less of a focus on the causes of criminality, understanding pathways into crime and the contexts of people's offending. In her article Gelsthorpe quotes Professor Mike Maguire of Cardiff University who argues that without qualitative research it is "all too easy for those studying crime to lose their sense of reality and begin to perceive offenders not as people, but merely as 'problems' or 'numbers'".

3.5 There is one area of Home Office policy that raises particular concerns. Despite a commitment to developing evidence-based policies academics point out that the Government's policies on anti-social behaviour (ASB) are not remotely evidence-based. The vigorous promotion of anti-social behaviour orders (ASBOs) is not supported by detailed research on their impact or effectiveness. As Judy Nixon of Sheffield Hallam University notes:

"While there is a diverse and growing literature on ASBOs the absence of robust empirical research means that much of what is written is dominated by anecdote, conjecture and rhetoric."

3.6 The embedding of the Home Office's research department (RDS) into specific policy areas such as anti-social behaviour and the National Offender Management Service may create a sole focus on policy led research rather than research that illuminates policy development. The incompatibility between neutral evidence construction and as Tim Hope suggests, "the natural inclination of the political process" may impact on the commissioning and design of embedded research. Co-incidental is the absence of even a small Home Office budget for "blue sky" research that does not have the exigencies of political life to contend with.

3.7 Disillusionment with the Home Office's approach should not be underestimated. It has prompted Dr Reece Walters to call for a boycott. He argues for criminology to become a "knowledge of resistance":

"This calls for a politics of engagement that is often prohibited by the proscriptive and regulated culture of government and corporate-led research, which many academics are seduced by in the name of income-generation or evidence-based decision making . . . Only a criminology of resistance can achieve an active engagement that upholds the role of critic and conscience of society as its mandate and seeks to mobilise networks of collective concern outside the inner and often financially lucrative circles of government and corporate contracted research."

4. CONCLUSION

4.1 A commitment to a sound and well researched evidence base is key to understanding social problems and devising effective policy responses. This commitment is widely supported by academics and the Home Office would claim to support it too. However, there is mounting concern about the trajectories of current research agendas and the associated policies they initiate and support. CCJS does not necessarily support all these concerns but feels it is vital that they are seriously considered by the Science and Technology Committee.

4.2 Finally, a question that stands out in CJM 62 “Uses of Research” is whom is Home Office research for? Ministers, Parliament or the public? There appears to be a great deal of misunderstanding about the answer to this question. In light of this, one outcome that may help avoid a future return to the concerns expressed in CJM 62 is a publicly debated and agreed set of protocols that set out rules for commissioning, design, publication and evaluation of research.

Annex

Article by Tim Hope in CJM 62, “Uses of Research”

THINGS CAN ONLY GET BETTER

Tim Hope questions the evidence in evidence-based policy making.

We did not want to enquire too closely when the Government announced its support for “evidence-based” policy-making. After the long years of having criminological research ignored, under-valued and under-funded by the Conservatives, we were not inclined to be picky. So, like drifting mariners, many of us succumbed to the siren call of the Home Office for independent evaluation of its Crime Reduction Programme. I like to think we had some honourable motives: a desire to support the application of knowledge to social progress, perhaps? I also like to think we trusted our Government, whose promises of reform appeared to merit support. Along with some of my academic colleagues, we have published our various accounts of our evaluation experiences in a special issue of the journal *Criminal Justice* (Volume 4 (3), 2004). For my part, it was with sadness and regret that I saw our work ill-used and our faith in government’s use of evidence traduced. Yet, though I have been sorely tempted at times, I do not want to pin the blame entirely on the mendacity of political culture, or the self-interests of the various coteries who swarm around politics (Hope, 2004). In many ways, I do not think either politicians or their advisers could help themselves resist temptation. Rather, the blame lies with an incompatibility between the ideology of evidence-based policy and the natural inclination of the political process to want to secure the best outcomes. Given the power of politics, it is not rocket science to predict what will happen when evidence gets in the way of a good policy. Recently, Tony Bottoms has written that “methodology matters” (Bottoms, 2005). It matters because methodology, complicated and tedious though it might appear, is the only way in which science can rescue, defend and indeed empower evidence within the political claim-making about “what works”. And methodology ought to matter, as it does to scientists, because it is the only way in which the validity of the evidence itself can be held to public account.

Writing more than thirty-five years ago, at the crest of another wave of evidence-based policy-making, the eminent American social scientist Donald T. Campbell (1969) wrote a famous paper justifying the application of rigorous research methodology to the evaluation of policy. His chief justification was to protect the public interest against what he called “trapped administrators”—politicians in power who become trapped by their own rhetoric and promises into claiming success for their policies in advance of the evidence. Trapped politicians are well disposed to pretend that policies work even in the face of evidence to the contrary. But Campbell was also aware of certain statistical artefacts (which have been apparent since the foundation of statistical reasoning in 19th century) that could be turned to advantage by the trapped administrator.

The best odds for the trapped administrator are where you can get away with capitalising on chance: for instance, the greater chance that if the probability of something is already declining over time it will continue to do so rather than abruptly change direction; or the phenomenon of “regression toward the mean” (RTM)—that if something observed at one time is extreme, it is more likely the next time to be less rather than more extreme, and vice versa (Yudkin and Stratton, 1996). This is especially likely to be so when, truthfully, you have little understanding of the underlying causes of a problem that makes its trend go up or down or vary from place to place, and so you are unable to make an honest prediction of “what works”, especially for whom, and in what circumstances. The best bet, as Campbell put it, is to pick “the very worst year, and the very worst social unit . . . there is nowhere to go but up, for the average case at least” (Campbell, 1978, p. 87).

The coincidence between statistical artefact and the promises of the trapped administrator is unfortunate: even if you don’t understand (or even care) what causes a crime rate to vary, let alone understand RTM and other statistical obscurities, as a politician you are more likely to be tempted to select the evidence that appears to support your belief than that which contradicts it. And if you are at pains to protect simple, honest folk from the black arts of research methodology—after all, practitioners don’t want to be confused

by the ifs and buts of research, they want to get on with job, don't they?—then, conveniently, neither they nor anybody else is going to be able to contradict your own desire to present evidence in the best possible light. Indeed, you may even dupe yourself.

Various evaluation research methodologies have emerged over the years to overcome or discount effects due merely to statistical artefact, including experimentation and regression-based statistical analysis. Yet the risks of erroneous inference due to selective and artefactual bias inherent in seemingly simpler research analyses continue to be ignored (see Hope, 2002). By way of illustration, take the results of two local projects from my research consortium's own evaluation of part of the Home Office Reducing Burglary Initiative—Phase 1, contained in Table 1 (for further information see: Hope, 2004; Hope *et al*, 2004).

Table One

IMPACT OF TWO LOCAL BURGLARY PREVENTION PROJECTS ON BURGLARY
(PERCENTAGE CHANGE) (SEE HOPE, 2004)

	A	B	C	D
	<i>Change in the target area</i>	<i>Change due to project (modelled)</i>	<i>Change due to "other things" (A-B)</i>	<i>Change in the rest of BCU</i>
Project A3	-47	-37	-10	-25
Project C7	14	39	-25	5

Recorded burglary offences almost halved during the course of Project A3, while they increased by 14% in the Project C7 area (column A). We employed a regression-based, time-series statistical method to estimate the proportion of change in burglary, over and above the general trend in each area, that could be attributed to the impact of the project itself. The same method produced very different estimates: for Project A3, we estimated that, if the only thing affecting the trend in burglary in each area had been the projects themselves, Project A3 would have reduced burglary by around a third, while Project C7, left to its own devices, would have actually increased burglary by two-fifths (column B). As it happened, other (non-project) influences on burglary in each of the areas served, presumably, to moderate the projects' effects: rather embarrassingly, the efforts of Project C7 appear to have off-set an otherwise generally favourable burglary reduction trend (column C).

Even though our method suggested that two of the other projects we studied could have produced even greater reductions, the Home Office selected from our case-studies only project A3 to write-up for practical benefit (Home Office, 2004a). Presumably, this was because the area-wide reduction was greater here than elsewhere (Hope, 2004, Table 1). Even so, the Home Office write-up has a rather different narrative from our own submitted site-report, the former conforming to an officially-endorsed descriptive framework known as the Five-I's (for more of our own details see Hope, 2005). Publicly, the Home Office has never commented on Project C7, which clearly remains something of an embarrassment. Not only does it seem that an official project could have let burglary increase but, at the outset, a Home Office consultant had described the project as "straight-forward" in conception. Of all our projects, this one was focused most specifically on the target-hardening of individual dwellings to reduce repeat victimisation (*ibid*)—an officially-endorsed burglary prevention strategy, carried out by a police service that had gained a national reputation for this kind of crime reduction work.

Instead, the Home Office published its own, pre-emptive analysis of the impact of the projects (Kodz, *et al*, 2004; Kodz and Pease, 2003). This used a "simpler" method to estimate impact, merely comparing the rate of change in the project target area with that occurring in the remainder of the police Basic Command Unit (BCU) in which the project was located, and combining together results of all the projects studied by each of the three evaluation consortia. Through various manipulations of the data, the Home Office method does what it can to capitalise on chance, producing much more favourable findings overall (Hope, 2004). But for individual projects, the method produces considerable distortion. Ironically, this method under-estimates the likely positive impact on burglary of Project A3 (Table 1); and although for Project C7 we now are presented with smaller numbers, these cannot disguise the three-times greater increase in the target area (column A) than in the rest of the BCU (column D).

Let it be thought that such practices are confined to the management of a particular political programme, let's take a look at the current Home Office Public Service Agreements. Number One on the list is to "reduce crime by 15% and further in high crime areas, by 2007–08" (HM Treasury, 2004). Going by what I have just said, this doesn't look like such a bad bet; not only has crime been going down steadily but RTM would suggest that we can rely on getting bigger reductions in the high crime areas too. Indeed, it is in the top 40 (but why 40?) CDRP (Crime and Disorder Reduction Partnership) areas in 2003–04 that the Home Office is looking for greater than average reductions over the period, compared to the remaining 336 CDRP areas (Home Office, 2004b). Of course, by the same reasoning, particularly if you are not actually doing anything effective, the odds are just as likely of getting less than average reductions in the lowest crime areas (but let's not talk about that).

Even so, it might not be as easy as it looks—chance is fickle after all. Thus, for example, even if we could show that crime rates this year had reduced in what were the highest crime areas last year, that would not necessarily mean that the gap between the highest and lowest areas this year was any less than it was last year; after all, RTM suggests it is likely that other areas may have taken their respective places this year. Reducing the “performance gap” actually means doing something to affect the distribution of performance as a whole, across all the partnerships, since the catch in RTM is that reductions towards the mean are compensated in similar magnitudes by increases.

We shall have to wait and see whether the performance data released publicly allows us to assess whether any real, rather than artefactual, reductions in crime have occurred. But when I say “us” I don’t mean the electorate, of course. For most citizens, everyday life is increasingly resembling a lottery. By the same token, supporting government policies these days is like taking a trip to the betting-shop. But if that is the way we are to be governed, do we not have a right not only to know how to calculate the odds but also whether to trust the bookmaker? And are criminologists becoming merely the tipsters of the new crime reduction sweepstakes?

Tim Hope is writing in his capacity as Professor of Criminology at Keele University. The views expressed here do not reflect necessarily other commissions in which he is engaged currently.

March 2006

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APPENDIX 18

Memorandum from the Department for Transport

SCIENTIFIC ADVICE, RISK AND EVIDENCE: HOW THE GOVERNMENT HANDLES THEM.

Memorandum on the use of research and evidence in the development of Government policy and guidelines on a) traffic calming measures and b) the use of speed cameras.

INTRODUCTION

1. Research and a strong evidence base are an integral part of the development of policies in the Department for Transport (DfT). This can be clearly demonstrated in the areas of research selected for scrutiny by the Committee i.e. traffic calming and safety cameras⁵⁷.

2. Traffic calming and safety cameras currently fall within the responsibility of the Road and Vehicle Safety & Standards Directorate (RVSSD) and contribute to delivering DfT's PSA objective to achieve by 2010, compared with the baseline averages for 1994–98:

- a 40% reduction in the number of people killed or seriously injured in road accidents;
- a 50% reduction in the number of children killed or seriously injured in road accidents;
- a 10% reduction in the slight casualty rate, expressed as the number of people slightly injured per 100 million vehicle kilometers.

3. The research and evidence needed to inform policy and operational decision-making is primarily the responsibility of the relevant policy directorate or agency. RVSSD, for example, works closely with related areas in the Department but manages its own research programmes focused on its objectives.

ROAD SAFETY POLICY AND RESEARCH

4. The primary objective of research in the field of road user safety is to support the Government policy of meeting the road casualty reduction target. Proposed annual programmes including research into speed management are drawn up after a careful assessment of priorities, taking into account other Departmental research plans and advice from our standing group of Road Safety External Advisers. Such programmes are then submitted to Ministers for approval.

5. The Department routinely monitors professional and scientific literature to identify and consider research commissioned by others, both at home and internationally. Furthermore, where a research topic is relatively new, rather than a refinement in an area where we have already conducted some research, the initial stage is often a literature review. This would scan the professional and scientific literature, both domestic and international, providing the basis on which to develop research project objectives for empirical study.

6. The majority of research projects are commissioned through competitive tendering procedures, with a small number let via Single Tender Action (for example when match-funding part of an EU-funded research project that has already been tendered). Depending on the nature of the project, adverts may be published in the national and specialist press inviting expressions of interest. In other instances, a limited number of organisations/individuals with specialist experience may be invited to bid for a specific piece of research.

7. Wherever appropriate the research programme ensures that both academics and stakeholders are involved through advisory groups and peer reviews. The Department's research procedures call for evaluation to be conducted at the end of each research contract and a year later in a follow-up review. This process of evaluation feeds into the development of the new research programme.

8. A compendium of road safety research is published annually and includes summaries of completed, on-going and newly approved research⁵⁸. Typically the findings of the road safety research projects are published by the Department through a series of Road Safety Research Reports (there are currently 67 reports in the series). Some research reports are published on behalf of the Department by organisations such as the Transport Research Laboratory. All published research reports on road safety are freely available on the web, typically on the DfT website⁵⁹.

9. Within the research programme the main types of research include:

- Monitoring trends over time;
- Fundamental research to identify issues;
- Development and evaluation of remedial measures; and
- Policy evaluation—assessing outcomes and processes using a variety of approaches including pilots and demonstration projects.

⁵⁷ In this memorandum the term safety camera is used throughout. Safety cameras are defined as speed cameras (about 87% of camera sites) and traffic light cameras (about 13% of camera sites).

⁵⁸ The compendium can be found at:
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/divisionhomepage/032511.hcsp
 A related compendium, on vehicle safety and intelligent transport systems (Feb 2006), will shortly be available at:
 Vehicle standards: safety.

⁵⁹ Road Safety Research Reports can be found at:
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/divisionhomepage/032513.hcsp

10. The areas of safety cameras and traffic calming encompass a wide range of tools and interventions to manage speeds and traffic volumes across the road network using a combination of the underlying principles of the 3 Es—education, engineering and enforcement. For many physical road safety interventions the outcomes and impacts can be measured and assessed in terms of casualty reductions, the reductions that they achieve in vehicle speeds and cost benefit.

11. Reducing vehicle speeds is not just a matter of improving safety. It is also about improving the accessibility of the network to more vulnerable modes such as walking and cycling, and creating a more civilised environment. For some schemes that have broader traffic calming objectives, there are also wider environmental costs and benefits that can be taken into account when developing and evaluating the impact of such interventions.

12. This memorandum summarises the areas of safety camera and traffic calming and sets out the research that underpinned the development of policies in these areas. This is followed by an assessment of how far these research programmes reflect normal practice within DfT in the management and use of research, and also a look to potential future research and developments.

THE ISSUE OF SPEED IN ROAD ACCIDENT RISK

13. The general principle in developing interventions to improve road safety is to assess the evidence on the scale of the risk being faced by road users and then review the evidence on the potential measures and their effectiveness, ensuring that any measures implemented will reduce overall risk without increasing the risk to any sub-group.

14. Research has shown that reducing vehicle speeds on roads is a major contributor to reducing collisions and injuries. The Transport Research Laboratory reported in 1994 that every 1mph reduction in average speed led to a 5% reduction in collisions⁶⁰. A study in 2000 validated this figure⁶¹.

15. Furthermore, analysis of contributory factor data to accidents collected by the police shows that speed is a factor in almost one-third of fatal road accidents (the single most frequently cited factor), 18% of serious injuries and 11% of all injuries⁶². The Department is also making use of emerging speed-related data from its ongoing On-the-Spot research project in which expert teams from Loughborough University and TRL attend the scene following accidents of all severity⁶³.

16. Nonetheless, despite this clear evidence, the Department's annual monitoring of vehicle speeds at selected sites across the road network shows that a high proportion of drivers continue to exceed speed limits⁶⁴ and Home Office statistics show that 2.2 million offences for driving in excess of the prescribed speed limit were dealt with by police action in 2003⁶⁵.

17. The delivery of effective speed management policies, at both a national and local level, therefore has an important role to play in improving road safety for all road users and delivery of the 2010 targets.

18. The Department's primary role is:

- to develop a national framework for determining appropriate vehicle speeds on all roads, and ensuring that measures are available to achieve them;
- to publicise widely and increase public understanding of the risks of speed; and
- to research a number of speed management problems to gain the necessary information to develop and test policies.

19. A detailed review of speed management policies was undertaken in the late 1990's⁶⁶. Based upon the extensive research evidence from the UK and abroad across the effects of speed, the impact of measures in influencing vehicle speeds, including traffic calming and safety cameras, this Review directly underpins the Government's road safety strategy and speed management policy commitments.

⁶⁰ Finch, D J, Kompfner, P, Lockwood, CR and G Maycock (1994) *Speed, Speed Limits and Accidents*, TRL Project Report 58, TRL, Crowthorne, Berks.

⁶¹ Taylor, MC, Lynam, D A and A Baruya (2000) *The effects of drivers' speed on the frequency of road accidents*, TRL Report 421, TRL, Crowthorne, Berks.

⁶² Mosedale, J and A Purdy (2004) *Excessive speed as a contributory factor to personal injury road accidents*, Transport Statistics, Road Safety, Department for Transport.
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⁶³ For details see:
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft—transstats_037809.pdf

⁶⁴ Vehicle Speeds in Great Britain 2004
http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats—037809.hcsp
NB Statistics for 2005 will be published on 6 April.

⁶⁵ Home office Motoring Offences and Breath Test Statistics 2003
<http://www.homeoffice.gov.uk/rds/pdfs05/hosb0605.pdf>

⁶⁶ DETR (2000) *New Directions in Speed Management—a review of policy*, DETR, 2000.
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_504682.hcsp

THE INTRODUCTION OF SAFETY CAMERAS AND EARLY EVALUATIONS

20. Safety cameras consist of cameras that enforce both speeding and traffic light offences. Safety cameras used by the police to produce evidence for court have to be of a type approved by the Secretary of State. The U.K. type approval process undertaken by the Home Office Scientific Development Branch is extremely rigorous and involves both operational and laboratory testing. Details of the type approval process are laid down in the *Speedometer Handbook*⁶⁷.

21. The purpose of deploying safety cameras is to encourage road users to drive within the speed limit, specifically at locations where there is a known speed-related danger of crashes, and to deter “red light running”. With an overall objective of reduced casualties, camera sites have historically been identified systematically on the basis of collision statistics.

22. The Road Traffic Act 1991 provided for the use of camera technology to combat problems of dangerous speeding and red light offences. The first deployment of cameras in anything like a systematic way was in West London in 1992, when 21 fixed speed camera and 12 red-light camera sites were installed and their effectiveness monitored⁶⁸.

23. In the early days the take up of automatic enforcement by police forces in Great Britain was modest. An early evaluation of safety camera effectiveness commissioned by the Home Office⁶⁹ demonstrated that the net benefit of speed cameras was five times the initial investment in the first year and more than 25 times after five years. The study, however, concluded that, whilst cameras were effective at reducing casualties, the full benefits were not being realised as many police forces and highway authorities did not have the resources to use the technology effectively.

24. At that time all fines from camera enforcement accrued to the Treasury Consolidated Fund. In response to the Home Office report a new funding system was developed to enable safety camera partnerships of local authorities, the police, magistrates’ courts committees and other agencies involved in the enforcement process to have some of their camera enforcement costs refunded from the fine revenue.

25. To develop the practical arrangements and inform policy developments, the system was piloted in eight police force areas from April 2000. The pilots were originally envisaged to run for two years. However, results from the first year were so encouraging that the Government decided to extend the system nationally before the analysis confirming the effectiveness of the cost recovery system throughout the eight pilot areas over the first two years was later published in February 2003⁷⁰. Made possible by the Vehicles (Crime) Act 2001, since that time the National Safety Camera Programme has been extended to all but two police force areas in England, Scotland and Wales.

THE EFFECTIVENESS OF SAFETY CAMERAS

26. DfT publishes data on camera sites and regular annual evaluations have been published on their effectiveness throughout the national roll out^{71, 72}. As well as keeping authorities, the police and the general public up-to-date on the effectiveness of the programme, these evaluations also enable us to re-assess the future of the programme.

27. Undertaken by independent research bodies, these evaluations have looked at the impact on traffic speeds and casualty reductions at camera sites, plus public perceptions and the costs and benefits of implementation. The key findings of these annual assessments have continuously confirmed that:

- vehicle speeds are reduced at camera sites;
- the number of injury collisions and casualties are reduced at camera sites;
- public reaction to the safety camera programme has been positive; and
- the cost recovery system has enabled a rapid increase in road safety investment

28. Other international experience has demonstrated the effectiveness of cameras. A report by the OECD in 2003 reported significant reductions in casualties and collisions at camera locations across Europe and in New South Wales, Victoria and Queensland⁷³. There is also now increasing evidence emerging from France.

⁶⁷ The *Speedometer Handbook*, available on the HO website:

www.scienceandresearch.homeoffice.gov.uk/hosdb/public-protection/road-safety-cameras/type-approval-testing

⁶⁸ London Accident Analysis Unit (1997) *West London Speed Camera Demonstration Project, July 1997*. Highways Agency, London.

http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_023366.hcsp

⁶⁹ Hooke, A, Knox, J and D Portas (1996) *Cost Benefit Analysis of Traffic Light and Speed Cameras*. Police Research Series Paper 20, Police Research Group, Home Office, London.

⁷⁰ *A cost recovery system for speed and red-light cameras—two year pilot evaluation*, Department for Transport, 11 February 2003, PA Consulting Group and UCL

http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_507639.pdf

⁷¹ *The national safety camera programme—three-year evaluation report*. PA Consulting Group and UCL, June 2003.

http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_029193.hcsp

⁷² *The national safety camera programme—four-year evaluation report*. PA Consulting Group and UCL, December 2005.

http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_610815.hcsp

⁷³ OECD (2003) *Road Safety: Impact of New Technologies*, OECD, Paris, France.

29. There is also no doubt about the effectiveness of cameras amongst the academic and professional community. For example, an international review of the evidence of the effectiveness of speed cameras⁷⁴ that appeared in the British Medical Journal in 2005 found that reductions in outcomes ranged from 5% to 69% for collisions, 12% to 65% for injuries, and 17% to 71% for deaths in the immediate vicinity of camera sites. The reductions over wider geographical areas were of a similar order of magnitude. This review found no examples of speed camera programmes producing negative road safety effects.

30. However, as evidence of the effectiveness of cameras in reducing the number of casualties increases, there has been increasing debate as to how much of the effect is a true effect and how much is an overestimate resulting from selection bias (regression-to-mean) effects. A study into the effectiveness of 79 cameras on 30mph roads concluded that, even after allowing for regression to mean and the general national casualty trend, those cameras had reduced the number of killed or seriously injured casualties by 11%⁷⁵.

31. The Department has itself been concerned to ensure that if the effect of regression-to-mean is real then it should be taken into account in assessing the effectiveness of speed cameras. Following publication of the evaluation of the first three years of operation of the national programme the Department's Chief Scientific Adviser chaired a meeting at the Royal Statistical Society to discuss the methodology for assessing the effectiveness of cameras. As a result the independent academics were asked to consider this as part of the four-year evaluation of the national programme, which was published on 15 December 2005. The methodology used by DfT for evaluating the effectiveness of safety cameras has therefore been open to scrutiny and peer review.

32. From the four year review it was found that, even taking into account the effects of regression-to-mean, safety cameras continue to make a valuable contribution to the reduction of casualties at camera sites.

33. The research evidence from public opinion surveys including those carried out as part of the evaluation for DfT and those completed by other organisations such as the AA, RAC and insurance companies, suggests that drivers are positive in their attitudes to the use of safety cameras as a way of reducing casualties, although support has diminished following persistent criticisms by some sections of the media.

34. Safety Camera Partnerships' participation in the current National Safety Camera Programme (entering its final year of operation) is governed by strict rules which are set out in a published annual Handbook of Rules and Guidance. Those rules have been developed and strengthened over time in the light of operational experience.

35. Safety cameras have been thoroughly and independently evaluated and scrutinized over recent years. In 2005 DfT undertook a review of the programme to ensure that it continued to be effective and deliver the best possible casualty reductions in the future.

36. On 15 December 2005 the Secretary of State for Transport announced a package of changes to the funding and administration of the national safety camera programme. The current funding arrangement will end after 2006–07 and from 2007–08 safety cameras are being integrated into the wider delivery process through the Local Transport Plan system.

37. The conclusions of the four-year evaluation of the programme, including those on regression-to-mean, have been used to underpin some of these changes, especially for camera deployment criteria for 2006–07. Partly to address the regression-to-mean issue these include:

- That the deployment criteria continue to use collision data over the most recent three years but that when a site is identified, data for the most recent five years is examined to determine whether collisions are at their peak.
- That all personal injury collisions (PICs) are considered as part of the deployment criteria.

TRAFFIC CALMING

38. Traffic calming was introduced in the UK following successful schemes in Europe that had improved safety in urban areas. Research was necessary to ensure that the techniques could be introduced safely to this country. The basic concept behind traffic calming is to provide a self-enforcing speed restraining effect. If successful, traffic calming removes the need for other types of enforcement, including speed cameras.

39. Traffic calming measures under the Highways (Traffic Calming) Regulations 1999 are rumble devices, gateways, chicanes, islands, pinch points, build outs, and overrun areas. Road humps in their various guises come under the Highways (Road Humps) Regulations 1999, but are commonly thought of as traffic calming measures. At a regional or a city-wide level, a traffic calmed area could be thought of as a calming measure. The techniques used to create these can be as diverse as direction signing or careful arrangement of the horizontal road layout (as with a Quiet Lane in a region and a Home Zone in a city, respectively).

⁷⁴ Pilkington, P and S Kinra (2005) *Effectiveness of speed cameras in preventing road traffic collisions and related casualties: systematic review* British Medical Journal, 330 (7487), 331–334.

⁷⁵ Mountain, LJ, Hirst, WM and MJ Maher (2004) *Costing lives or saving lives? A detailed evaluation of the impact of speed cameras on safety*. Traffic Engineering and Control, 45 (8), 280–287.

PROCESSES USED TO COMMISSION AND EVALUATE RESEARCH ON TRAFFIC CALMING MEASURES

40. Topics for research are identified in conjunction with local highway authorities and stakeholders such as the Countryside Agency and the English Historic Towns Forum. The scope and priority of projects are put together on a themed and Divisional basis in a proposed annual programme of research projects. Consultation is conducted more strategically with local authority representative groups, the Highways Agency and others; currently this is done through the Traffic Management Board of the Roads Liaison Group⁷⁶.

USE OF PILOT STUDIES FOR DEVELOPING TRAFFIC CALMING MEASURES

41. Pilot studies have been used effectively to evaluate real-life impacts (positive or negative) of innovative traffic management measures, often to develop legislation. In addition, the use of traffic calming measures in particular circumstances have been studied where a particular problem has been identified.

42. Some measures such as chicanes, alternative road hump designs and more recently Rumblewave surfacing were tested off-road initially to determine their performance. They were then introduced at trial sites on the public highway as pilot studies within the research. Where successful, the Department has issued guidance to authorities or drafted legislation based on good evidence of practical measures that can be adopted. In some instances, the pilot studies have highlighted previously unforeseen issues. For example the Rumblewave pilots identified vibration problems. The causes of these were then studied further and the final advice to authorities provided robust guidance on locations where Rumblewave should be avoided.⁷⁷

43. Local highway authorities have considerable flexibility concerning features they wish to install on their road network. Information may sometimes be gathered about their real-life experiences in order to refine advice on certain topics. Two examples are:

- (a) the Historic Core Zone project investigated how effective traffic management schemes can be designed to suit areas with special historic character⁷⁸; and
- (b) traffic calming in villages on major roads examined whether schemes could be designed that would reduce the 85th percentile speeds to no more than the speed limit at each site.⁷⁹

REFINEMENT OF POLICY ON TRAFFIC CALMING MEASURES IN RESPONSE TO EMERGING RESEARCH FINDINGS AND EXPERIENCE

44. Research on traffic calming has been conducted since the late 1980's to the present day and policy refined along the way. The first Traffic Advisory leaflet 1987 on the topic simply drew attention to the techniques that had been used in this country and abroad. The Department is currently finalising an extensive Local Transport Note (current draft is 170 pages) that brings together a summary of research, legislation, design, effectiveness and installation in one document to provide advice on the use of traffic calming measures today.

45. Results of research are published in research reports and are often summarised to present key messages in Traffic Advisory Leaflets. 12,000 copies of each leaflet are printed; about half go straight to local authorities and others on a voluntary mailing list. The latest bibliography on traffic calming, that includes Traffic Advisory leaflets, is available in paper form or through the website.⁸⁰

46. Section III of the bibliography includes a list of Traffic Advisory Leaflets that give guidance on the traffic calming topics studied through research projects funded by the Department. Section IV lists publications from TRL Ltd which are the reports on the Department's research topics studied under the following headings: road humps, traffic calming, projects and impacts of traffic calming.

47. These sections show (through the numbering system for the leaflets and reports) how issues have been addressed and how research topics progressed over recent years. For example, under traffic calming the focus has moved from simple measures such as overrun areas and gateways to Home Zones, Quiet Lanes and Rumblewave surfacing. Under the impacts of traffic calming, research has moved with the concerns of the time from issues associated with fire and ambulance services' through emissions and vehicle noise to ground-borne vibrations and discomfort.

48. An example of how research has influenced changes in legislation can be readily seen in the development of road humps. The original road hump regulations in 1983 allowed round-top humps of 100 mm in height and 3.7 metres in length to be installed on roads in England and Wales with a speed limit of

⁷⁶ UK Road Liaison Group.

⁷⁷ TRL Report PPR 020 Prediction of ground-borne vibration generated by heavy vehicles crossing a rumblewave device by G Watts and R King, September 2004.
TRAFFIC ADVISORY LEAFLETS 1/05 Rumblewave surfacing, and at
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft—roads_037121.pdf

⁷⁸ See for example Traffic Advisory Leaflet 13/99 Bury St Edmunds Historic Core Zone.

⁷⁹ Traffic Advisory Leaflet 1/00 Traffic Calming in Villages on Major Roads.

⁸⁰ Traffic Advisory Leaflet 2/05 (Jan 2005), Traffic Calming Bibliography:
http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft—roads_037119.pdf

30 mph or less. There have been several revisions to these regulations, and the most recent do not specify a hump profile because research showed that a range of hump designs had speed-reducing potential, were safe for use on public highways and would better fit the needs of authorities. Local authorities are allowed to install humps (including speed cushions) on roads with a speed limit of 30 mph or less, without the need for special authorisation, providing the humps are between 25 mm and 100 mm in height, at least 900 mm in width in the direction of travel, and have no vertical face greater than 6 mm. However, the Department also provided evidence-based advice, via Traffic Advisory Leaflets, on recommended hump dimensions, for example recommending 75 mm high full-width humps as a compromise between speed control and negative impacts⁸¹.

49. Another example is the development of 20 mph zones. When initially introduced, 20 mph zones were seen as being novel and therefore each zone required the consent of the Secretary of State before they could be implemented. Research into the performance of 20 mph zones then showed that accidents resulting in injuries are reduced by around 60% and accidents resulting in injuries to children reduced by about 67%. As a result the Department introduced regulations in 1999 which allowed traffic authorities to implement 20 mph zones without the consent of the Secretary of State.⁸²

50. There has been concern that the cumulative effect of the growing number of traffic calming schemes could compromise the ability of fire and ambulance service operators to meet the required response times. There have also been suggestions that traffic calming features might unwittingly lead to increased patient discomfort, or cause damage to equipment carried in ambulances or fire appliances.

51. A Code of Practice on arrangements for consulting on proposals to introduce traffic calming measures was agreed by the Joint Committee on Fire Brigade Operations, The Department of Health's Ambulance Policy Advisory Group, the Local Authority Associations and the DTLR (TAL 3/94) in 1994. That Code of Practice and the corresponding TAL is currently being updated in light of more recent best practice, including the designation of strategic emergency routes on which more severe speed reduction measures should not be used.

WIDER ISSUES RELATED TO SPEED MANAGEMENT

52. Speed cameras and traffic calming are a few of many policy tools to help deliver more appropriate and safer speeds on the roads.

53. The DfT continues to monitor the impact of vehicle speeds and speed on road safety—through its annual vehicle speeds and contributory factors data collection systems. More recent research has added greatly to our knowledge of the impact of different speeds on the severity of road accidents and actual vehicle speeds being driven on roads. This is being used to inform decisions on speed limits, their enforcement and future research needs.

54. In 2004 the Department sought advice from leading academics in the road safety field regarding the research questions and objectives that should be included in a programme of research into speed management and which would inform development of evidence-based policy for the future.

55. As a result a number of common themes were identified and four projects are now in the process of being awarded. These include a study which seeks to understand the environmental cues that are important in dictating speed choice. The project will seek to identify the features of the road and roadside which could be modified affordably to encourage choice of appropriate speeds, and would thus reduce the severity of injury in those speed-related crashes which nevertheless will still happen.

56. DfT is also actively involved in a number of international expert groups to ensure we are aware of best practice and the most up to date research in other countries—for example an OECD Speed Management Working Group (established 2004).

TYPICAL OR EXCEPTIONAL?

57. The ways in which research and evidence are managed, assessed and exploited vary widely according to the issue to be studied. In many areas of the Department's work, much evidence is likely to be generated by other bodies (eg stakeholders, partners, transport operators) or through regular activities (eg monitoring or statistical surveys) and our role is to assess the contribution the evidence derived from these activities can make to decision-making. In others, such as Road Safety, where our responsibilities position us as the key user of relevant evidence, the Department is a major (or the major) funder of research to improve the evidence base used to inform policy and operational decisions. This is also an area where trials and pilots can inform policy within a timescale that can have an effect on future development and roll-out of that policy. Clearly this is not always the case, for example, when seeking evidence to inform decisions on long-term strategic infrastructure.

⁸¹ TRL Report 186 *Traffic Calming—Road Hump Schemes using 75mm High Humps*.

⁸² TRL Report 215 *Review of Traffic Calming Schemes in 20 mph Zones*.

ROLE OF THE CHIEF SCIENTIFIC ADVISER

58. <http://transnet/doc2.asp?docId=141339&catId=69301> The role of the CSA is to challenge the content and quality of the Department's policies at a strategic level and work with heads of profession and research programme managers to ensure high quality and fitness for purpose of the science and research funded by DfT and its agencies. Further details on the general approach are at annex 1.

59. To improve strategic handling of evidence and research, a new approach is currently being implemented. The Department has published a new draft Department-wide Evidence and Research Strategy covering a whole range of economic, technological, social and environmental factors. Through this strategy, we are seeking a more integrated evidence base at a strategic level, acknowledging all sources of evidence—monitoring and data collection, analysis (of internal and information available elsewhere), policy evaluation and commissioned research—and ensuring quality by adopting best practice. This strategy sets out what we currently understand our evidence needs are for the next three years and beyond, as well as the areas and activities we plan to develop. The high-level strategy will be developed to assist 30-year planning and integration with medium-term and business planning.⁸³

60. More immediate evidence needs have been assessed against broad policy themes—reducing congestion, improving accessibility and public transport, reducing environmental impact, improving safety and security and supporting the economy. Though these themes, we are better able to review evidence gaps, priorities, dependencies and possible duplication.

61. Management of evidence and research funded by the Department is largely devolved to the policy units and agencies responsible for delivery of our objectives. The Departmental Strategy will be supplemented by more detailed Unit (and agency) strategies, currently under development, which will be published in 2006.

62. Relevant to the cases identified, and as reported above, the CSA chaired a meeting of academics in October 2004 seeking advice on the scope and content of a programme of research on issues relating to speed to inform development of policy. He then instigated the meeting of the Royal Statistical Society (Nov, 2004)⁸⁴ to consider the evidence which indicated that speed needed to be managed and examined a number of ways of determining whether speed cameras had been effective. The meeting also considered broader issues of interest to all statisticians and practitioners, regarding the quality of the evidence base that informs public policy. This reflected the CSA's wish to encourage learned societies to engage with the Department's research and provide informed critique and high level scrutiny.

63. One larger issue in the area of roads and traffic policy is the increasing use of automatic enforcement, ranging from the enforcement of parking restrictions to the use of technology and linked databases to detect infringements such as speeding or driving without insurance or MOT or driving a stolen car, to road charging, to eventually perhaps "car convoys" on motorway. A recent Occasional Research Report from the Parliamentary Advisory Council for Transport safety examined the subject of automatic enforcement in detail.⁸⁵

64. One of the challenges here is developing robust information bases to support increased dependence on technology. An example, on which the Department is currently making progress, is a database of speed limits. An Outline Business Case Report was prepared by Atkins for the Department (Speed Limit Database Feasibility Study: Outline Business Case Atkins Oct 2005). This analysed three different database delivery options and each showed benefit-cost ratios for implementation of over 100. Such a database could be used, subject to an improved understanding of public attitudes, concerns and behaviours, to deliver a range of value-added services through the private sector as well as safety techniques such as intelligent speed adaptation.

65. This links also to the broader picture exemplified by the Data Grand Challenge—one of three Grand Challenges identified through consultation with Permanent Secretaries and CSAs on the basis that they are:

- a public policy issue where scientific research could play a major role in establishing the way forward and exhibiting potential for business opportunities; and
- not exclusively the responsibility of a single department.

66. Improved IT systems offer an opportunity to integrate data maintained on separate systems both inside and outside Government. By making use of data from diverse sources, performance can be monitored in "real time", leading to greater efficiency and more devolved decision-making. Improved strategies to address Government's role as a custodian, regulator, provider and user of data will also help to establish a move from a centralised 'control and communicate' model of data provision, to a decentralised model similar to that of the US, in which any unanticipated but legitimate user can find, access and use data. This has important implications for the provision of public services.

⁸³ The DfT Evidence and Research Strategy (draft), Mar 2006, can be viewed at: www.dft.gov.uk/ers

⁸⁴ Mantled in Mist: The importance of the evidence for the effectiveness of speed cameras, Nov 2004: The Royal Statistical Society—Past Events.

⁸⁵ Policing Road Risk: Enforcement, Technologies and Road Safety, Sep 2005: Parliamentary Advisory Council for Transport Safety.

67. The Science and Innovation Cabinet Committee approved taking forward the Data Grand Challenge paper (SI(05)1) assigning DfT, as lead department, to submit a scoping report in late spring 2006.

April 2006

Annex 1

ROLE OF THE CHIEF SCIENTIFIC ADVISER

Professor Frank Kelly reports to the Permanent Secretary and has direct access to the Secretary of State. Ministers or senior officials may seek his opinion on any topic where a scientific or engineering viewpoint is needed.

His work involves:

- making sure that the Departments' scientific activities are well directed and that policy is soundly based on good science;
- helping develop the Department's scientific links with the outside world, and encourage the Department to consider science issues, as they affect policy, at an appropriately senior level;
- ensuring representation and strategic direction at the top of Department, meeting regularly with the Board and Ministers;
- working with the Government Chief Scientific Adviser, other Government research advisers and departmental CSAs to ensure the overall quality of science and research in government;
- working with staff in advising Ministers, the Board and senior officials on the scope for enhancing the evidence base through science and research when major policy reviews and public consultations on policy development are considered;
- helping ensure that the Department uses properly the research it commissions and has the right balance and quality of internal expertise by advising on the training, development and deployment of science and research professional staff;
- ensuring that the Department has effective horizon scanning arrangements so that issues involving science or issues where science could be of benefit, are identified in advance; and
- assisting the Department in publicly explaining the science and research evidence base of policies

APPENDIX 19

Memorandum from the Department for Environment, Food and Rural Affairs

BACKGROUND

1. Defra welcomes the opportunity to contribute to the House of Commons Science and Technology Committee's inquiry into the use of scientific advice in the development of policy. Defra has a broad and complex agenda, and a wide range of evidence (including, but not limited to scientific evidence) underpins delivery of this agenda. Defra's Chief Scientific Adviser (CSA), Professor Howard Dalton, plays a central role in ensuring that Defra's policies are appropriately evidence based, and he is supported in that role by strategic advice from Defra's Science Advisory Council (SAC).

2. The Committee asked Defra for information on:

"the way in which the Chief Scientific Adviser and the Science Advisory Council contribute in practice to the development of policy in the Department, with particular reference to the way in which research and evidence has informed the development and monitoring of UK 2010 biodiversity targets. The memorandum should also include any comment on whether the processes used in this example is typical or in any way exceptional in terms of the way research and evidence is handled in the Department."

3. This memorandum is the Departmental response to this request, and focuses on two areas. First, the role that the CSA and SAC play in Defra's work in general is described, and then the more specific question of their role and involvement in biodiversity policy and the development and monitoring of UK biodiversity targets is considered. In the latter case some background information concerning UK biodiversity policy is also provided.

THE USE OF SCIENCE AND RESEARCH IN DEFRA—THE ROLE OF THE CSA AND SAC

The Chief Scientific Adviser (CSA)

4. The Chief Scientific Advisor to Defra is an independent scientist, brought into the Department on a secondment basis from academia to ensure that Defra's policies and operations are appropriately evidence based. The CSA's roles include:

- Providing advice to Ministers on key scientific issues of policy relevance;
- Ensuring that quality and fit-for-purpose science is used to inform policy-making and operational decision taking within Defra;
- Engaging with stakeholders, particularly the scientific community;
- Raising the profile of Defra's science, especially the importance of science for sustainability.

5. Concerning the first two objectives, which are particularly relevant to the Committee's inquiry, the CSA operates at both a strategic level, ensuring that processes and resources are in place to deliver the required evidence base, and at an operational level, intervening personally in areas where there are particularly challenging or contentious areas of science. Recent examples of the latter include:

- Developing policy for the control of Bovine Tuberculosis (bTB). In order to inform the Defra's recent consultation document on controlling the spread of bTB⁸⁶, the CSA commissioned an independent review of the evidence base concerning the relationship between cattle and wildlife in the transmission of bTB⁸⁷. During the consultation period, the CSA organised a meeting of experts to discuss the issue of perturbation and other factors that might affect a badger culling policy to reduce bTB in cattle in high incidence areas.
- The Committee on Radioactive Waste Management (CoRWM). The CSA has been actively supporting the work of CoRWM⁸⁸, to ensure that scientific evidence is appropriately taken into account in making its recommendations. To assist in this, the CSA has appointed a panel of four experts and they have attended a number of CoRWM meetings and workshops associated with scientific inputs into the CoRWM's deliberations.

6. In order to ensure the delivery of an appropriate science evidence base to underpin Defra's policy development, each policy Directorate General includes scientists in its teams and appoints a Senior Science Co-ordinator, responsible for oversight of the professional standards of scientists in the DG and for keeping the CSA informed of relevant developments and issues related to their work.

7. An important component of the CSA's strategic work over recent years has been the Science in Defra Change Programme (SIDCP). The aim of this work can be summarised as "right science, right scientists". To ensure that Defra has access to the "right science" the CSA has put in place robust quality assurance procedures, developed Defra's top level science strategy, and initiated a programme of horizon scanning and futures work. To provide the "right scientists" for Defra, the CSA's Head of Science Profession project is aimed at developing further and enhancing the considerable in-house scientific expertise. Further details of these work areas are provided in the following paragraphs (8–18).

8. In 2003, the CSA put in place a team, independent of policy and funding lines, to develop strategies and policies to improve and assure the quality of the scientific work across the Department. There are four major strands to this work:

- Peer review of research proposals;
- Peer review of outputs;
- Quality Assurance of the research process; and
- Institute audits.

9. Peer review of research proposals has long been key to the Department's strategy for assuring the quality of its science. It is Defra's policy that all significant⁸⁹ research is peer reviewed by at least two independent scientists prior to funding. Last year, this resulted in over 80% of new research (by cost) being peer reviewed prior to funding.

10. In addition to proposals, outputs from the Department's science are increasingly peer reviewed. Recently, we reviewed the Farmland Conservation and Biodiversity Research programme, in which the reviewers concluded that "the overall message . . . is that Defra is receiving good scientific evidence from its . . . programme"⁹⁰.

11. To help assure the quality of the research process, Defra has lead, along with other public sector research funders, the development of the Joint Code of Practice for Research⁹¹. This cross-government initiative lays down the basic principles for carrying out robust, auditable research. Since July 2004, all research projects funded by the Department have been required to be conducted in compliance with the Code.

12. Defra conducts scientific audits of its three laboratory agencies⁹² on a five year cycle. These are carried out by a panel of independent, international experts drawn from the relevant fields and provide an external assessment of the quality, balance, scope and appropriateness of the scientific work carried out at each of the agencies. The Department is also represented on the Visiting Groups to BBSRC institutes where it makes a significant investment of research spend.

⁸⁶ <http://www.defra.gov.uk/corporate/consult/badgers-tbcontrols/index.htm>

⁸⁷ <http://www.defra.gov.uk/animalh/tb/pdf/wilesmore141105.pdf>

⁸⁸ <http://www.corwm.org.uk/content-0>

⁸⁹ Research directly feeding into policy or decision making and all scientific research costing the Department more than £250k.

⁹⁰ http://www.defra.gov.uk/science/documents/how/programmes/Review_FarmlandConservation.pdf

⁹¹ http://www.defra.gov.uk/science/documents/QACoP_V8.pdf

⁹² Centre for Environment, Fisheries and Aquaculture Science (Cefas), Central Science Laboratory (CSL) and Veterinary Laboratories Agency (VLA).

13. The CSA leads the development of Defra's Evidence and Innovation Strategy (E&IS). For the current round (2005–08), a consultation document was published in October 2005⁹³, which provides a current assessment of Defra's evidence and innovation needs. This strategy follows on from Defra's first Science and Innovation Strategy 2003–06, published in May 2003⁹⁴, and the Evidence and Innovation report, entitled "Evidence and innovation: Defra's needs from the sciences over the next 10 years", published in July 2004⁹⁵.

14. The E&IS aims to improve our understanding of how evidence and innovation can best support delivery of Defra's Strategic Outcomes (as set out in Defra's Five Year Strategy⁹⁶) and how our programmes will need to evolve in the future. The E&IS will also help refocus our use of knowledge (including science, social science, economics, statistics and engineering) in achieving Defra's objectives. The E&IS project will provide the basis for development of a long-term science procurement strategy, which will include the strategy for Defra's laboratories.

15. Also contributing to the E&IS process is an internal review of the Department's R&D investment, designed to re-align our research investment to enable delivery of our strategic outcomes and policy priorities. This will inform the R&D allocations for the final year of the period covered by the 2002 Spending Review (ie 2007–08) and set the longer-term direction of travel over the Comprehensive Spending Review (CSR) period.

16. A further aspect of the CSA's science strategy work focuses on issues that cut across organisational boundaries within Defra. For example, the CSA has identified Earth observation⁹⁷ as a key future technology for informing and delivering policy across the Department. The breadth of potential uses and the need for departmental, national and international coordination mean that Defra needs to take a strategic approach to technology development and adoption. The CSA is therefore developing a Earth Observation Strategy in coordination with key business beneficiaries with the aim of developing Defra's effectiveness in using Earth observation data and services.

17. Defra's Horizon Scanning and Futures (HSF) programme is considered to be one of the longest running and most diverse government HSF programmes. The use of HSF methodologies is helping the Department to develop anticipatory skills to spot potential risks and opportunities, as well as future proofing policies and strategies, thereby generating efficiency gains. They also are also important for developing insight, and help develop and rehearse possible futures and consider alternatives. Defra's Horizon Scanning and Futures programme is gaining valuable experience and expertise in the use and application of HSF methodologies within its research. The team has also developed an extensive network of futures experts and practitioners across government, academia, and the private sector. Our aim is to create a model of best practice and a pervasive understanding of HSF in order to embed it across the Department to ensure that it is utilised by policy teams to the best effect.

18. The Head of Science Profession (HoSP) project has been working to define and implement the CSA's role as "Head of Science Profession" for Defra's science and technical specialists. The Cross-Cutting Review of Science and Research (2002) made specific recommendations for the better management, development and deployment of scientific staff and alluded to a "Head of Science Profession" role for Chief Scientific Advisers. The HoSP role is to create opportunities for scientists to continually developing their skills and expertise, to be deployed in the most effective way to contribute to Defra's strategic objectives. The role was defined in consultation with Defra scientists by carrying out a wide-reaching consultation to understand their needs and aspirations, and how they feel a Head of Profession can best support them in their current role and career. Recommendations from the consultation have formed the basis of an implementation plan which is the means of turning the high-level role outlined in the findings into an active HoSP role for the CSA. The implementation plan outlines work areas which will be delivered to raise scientific capability in Defra.

The Science Advisory Council (SAC)

19. In order to further improve the access that Defra has to scientific advice the CSA initiated the creation of Defra's Science Advisory Council (SAC). The Council was established in February 2004 to support the CSA in providing Defra with independent, expert, and strategic advice on the science underpinning the Department's policies. The SAC communicates its advice to the CSA, and through the CSA to Ministers.

20. The SAC is an independent non-departmental public body, established in accordance with the Office of the Commissioner for Public Appointments (OCPA) Code of Practice and in line with guidance provided in the Nolan Principles of Public Life. The SAC has developed its own detailed Code of Practice, which emphasises the Council's open and transparent mode of operation, and which is based on the OST's more general Code of Practice for Scientific Advisory Committees. Full details of the SAC, its membership, papers and advice can be found on the SAC website⁹⁸.

⁹³ <http://www.defra.gov.uk/science/how/strategy.htm>

⁹⁴ http://www.defra.gov.uk/science/documents/Delivering_The_Evidence.pdf

⁹⁵ <http://www.defra.gov.uk/science/documents/forwardlook/ScienceForwardLook3rd.pdf>

⁹⁶ <http://www.defra.gov.uk/corporate/5year-strategy/index.htm>

⁹⁷ "Earth observation" is observation of the earth's surface and atmosphere from the air or space.

⁹⁸ <http://www.defra.gov.uk/science/how/advisory.htm>

21. From April 2006, there will be 16 members of the Council, with expertise across a broad range of topics relevant to Defra. The full SAC meets four times a year, with at least one meeting a year being open to the public. However, the majority of the Council's work is taken forward through sub-groups, which are established where appropriate to carry out studies and other pieces of work.

22. The SAC's terms of reference are as follows:

The Science Advisory Council (SAC) will help to ensure the quality and appropriateness of Defra's various scientific activities and use of science, by providing strategic advice on all of Defra's science activities and their relationship with both Defra's policy goals and the wider UK and international science base and horizons. To achieve this it will:

- provide independent and published advice to the Chief Scientific Adviser (CSA), and through the CSA to Ministers, on:
 - the strategic direction of, and priorities for, Departmental science;
 - the balance, relevance and adequacy of science activities supporting Departmental objectives;
 - broad strategic issues, priorities and policies from a science perspective;
 - the design of procedures relating to science advice; and
 - pressing science issues facing Defra.
- identify emerging challenges and opportunities, develop possible responses, and participate in horizon-scanning and long-range planning exercises;
- act as an important source of advice to the CSA on national emergencies in Defra's areas of responsibility, including acting as a conduit to specialists in the science community; and
- provide independent review of Defra's scientific activities, including its response in emergencies.

23. Since its inception, the SAC has developed its awareness of current Defra activities while starting to examine the underpinning process of science in Defra (risk management, and governance of science advisory bodies amongst other things).

24. The SAC has produced recommendations to the CSA on the following topics:

- Review of the governance of Defra Science Advisory Bodies;
- Quality assurance and peer review of Defra science;
- Review of the science evidence base underpinning the Foot and Mouth Disease element of the generic contingency plan;
- Input to the development of Defra's Evidence and Innovation Strategy—recommendations made on both content and process used for consultation; and
- An independent literature review of bovine TBWork is also in progress to review of the science evidence base underpinning the Avian Influenza element of the generic contingency plan.

25. A process of engagement between the SAC and Defra policy Directorate Generals has been initiated in order to:

- increase SAC member awareness of Defra's structure and key priorities and the science that underpins delivery of these, and;
- to establish channels of communication between SAC and Defra, to enable Defra staff to become more familiar with the purpose and the work of the SAC and help to ensure that the SAC work programme focuses on key priorities for Defra science.

26. An on-going piece of work that may be of relevance to the Committee's enquiry is an "end to end" review of how science feeds into policy in Defra. This work is being conducted by the SAC Governance sub-group with the following terms of reference:

- To consider Defra's policy-science interface, in particular whether research as commissioned was of value in informing policy once delivered. It will identify and endorse good practice in Defra and advise the Department on how science can inform policy more effectively (in terms of cost-effectiveness and impact on policy). The sub-group will:
 - Consider how policy needs are identified in Defra's Directorate Generals.
 - Consider how scientific research questions are set, including how Defra's stakeholders are engaged in the process.
 - Evaluate how science feeds into policy and whether it is done in a cost-effective way.
 - Consider how Defra's policy-science interface may be developed further.

UK BIODIVERSITY TARGETS

27. The maintenance and enhancement of UK biodiversity is a key policy area for Defra, forming a central part of our strategic priority 'Protecting the countryside and natural resource protection'. Defra's priority reflects international commitments to significantly reduce the rate of biodiversity loss by 2010 agreed at the 6th Conference of the Parties to the Convention on Biological Diversity⁹⁹ and subsequently adopted in the Plan of Implementation of the World Summit on Sustainable Development.¹⁰⁰ At the European level, the target of halting biodiversity loss by 2010 was agreed at the Gothenburg European Council and the Kiev Council of Europe.

28. At a UK level, biodiversity targets have been developed as part of the UK Biodiversity Action Plan (UKBAP) published in 1994. Specific targets have been agreed for around 400 priority species and 40 priority habitats. Implementing the UKBAP and monitoring progress is the responsibility of the UK Biodiversity Partnership which consists of a range of bodies including Defra, statutory conservation agencies and NGOs. The UK Biodiversity Partnership is co-ordinated by the Biodiversity Partnership Standing Committee (BPSC) which has established two support groups—the Biodiversity Research Advisory Group (BRAG), which is chaired by Defra, and the Biodiversity Reporting and Information Group (BRIG).

29. The targets for priority species and habitats within the UKBAP were originally published in the late 1990s and therefore pre-date international commitments to the 2010 target. The targets are currently under review, overseen by the BPSC, and this review is due to be completed during 2006. The review of targets for priority habitats and species is being co-ordinated by English Nature, while the review of the priority lists themselves is being co-ordinated by Joint Nature Conservancy Council. Further details of the review are available on the UKBAP web site¹⁰¹.

30. In addition, in 2005, the BPSC agreed to develop a set of headline indicators for assessing achievement of the 2010 target. This work is ongoing and will build on existing Sustainable Development Indicators and other indicators developed within country strategies, following the framework established by the Convention on Biological Diversity (Decision VII/30).

31. Defra also leads on the England Biodiversity Strategy. A baseline set of indicators for this strategy was published in 2003, and are currently being updated to assess progress up to 2006. These indicators relate to the more specific objectives of the Strategy, and in particular the success of integration of consideration for biodiversity in other sectors (eg agriculture, forestry and development).

32. Delivery of the UKBAP is underpinned by a significant evidence base in the form of specific research projects, and long-term monitoring programmes. This research is funded and undertaken by a large number of organisations including Defra, the Devolved Administrations, statutory agencies, research institutions and NGOs. In addition, scientists working in policy Directorates General are members of Biodiversity Action Plan (BAP) groups including the hedgerows and arable field margin Habitat Action Plan (HAP) groups. Their input covers the provision of advice on Defra research and other pertinent science issues. They also take the lead in procuring new research based on recommendations arising from the groups. It is the responsibility of these scientists to keep the CSA informed of significant scientific developments related to the BAP and HAP groups.

33. While evidence needs are important across the range of UKBAP activities, identifying cross-cutting research needs is the specific remit of BRAG, a scientific and technical advisory group which is currently chaired by Defra.

34. Defra spend in 2005–06 on programmes that contribute significantly to the evidence base for the 2010 target includes the Wildlife and Countryside (£2 million) and Environmental Stewardship (£2.4 million) research programmes and the Environmental Stewardship Monitoring and Evaluation programme (£1.3m). In addition, there is a significant amount of related work undertaken in other Defra science programmes, for example, water quality, air quality, environmental effects of pesticides and marine environment. Information from these other programmes will add to the evidence base. Further details about Defra's science programmes and projects are available on the Department's website¹⁰².

35. One of Defra's Public Service Agreement (PSA) targets is concerned with UK biodiversity:

PSA 3. Care for our natural heritage, make the countryside attractive and enjoyable for all and preserve biological diversity by:

- Reversing the long-term decline in the number of farmland birds by 2020, as measured annually against underlying trends;
- Bringing into favourable condition by 2010 95% of all nationally important wildlife sites.

⁹⁹ <http://www.biodiv.org/decisions/default.aspx?m=COP-06&id=7200&lg=0>

¹⁰⁰ http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf

¹⁰¹ Overview of UKBAP review:

http://www.ukbap.org.uk/library/brig/BRIGReviewSummary_11_05.pdf; Targets review:

<http://www.ukbap.org.uk/GenPageText.aspx?id=98>; priority lists review:

<http://www.ukbap.org.uk/GenPageText.aspx?id=102>

¹⁰² http://www.defra.gov.uk/research/project_data/Default.asp

36. A considerable amount of research and monitoring underpins these PSA targets, both to assess how well they are being met, and to inform the policies developed to meet the targets. Defra was identified by the National Audit Office as following good practice in adapting policies to address the Farmland Birds target¹⁰³. This involved the use of evidence, analysis, comparison of options, assessing cost effectiveness, and stakeholder engagement.

CSA involvement in biodiversity targets

37. The CSA's involvement in the evidence base related to biodiversity targets has largely been through the activities of Defra scientists working in the policy directorates, and through key underpinning activities in two areas:

- Quality assurance;
- Development of Evidence and Innovation Strategy.

38. Quality assurance of the evidence base underpinning biodiversity targets and their monitoring is provided by a variety of means. First Defra-funded research is subject to the quality assurance procedures introduced by the CSA as described in paragraphs 0-0 above. Adherence to these procedures gives the CSA assurance that the evidence outputs are fit for purpose. Second, evidence procured by other members of the UK Biodiversity Partnership is subject to the quality assurance procedures of those organisations—for example, proposals for Research Council funded work is subject to extensive peer review. Thirdly, evidence used to inform UKBAP is reviewed by various other expert groups convened under the auspices of UK Biodiversity Partnership. Finally, where appropriate, the scientific evidence is published in the peer reviewed literature, further ensuring its quality.

39. The future evidence needs to support Defra's biodiversity targets have been set out in the recent consultation on our Evidence and Innovation Strategy (see paragraphs 0-0 above), and this represents a further key area of CSA involvement. This work has identified key areas of evidence need for the future including the work to underpin the further development of indicators and monitoring. In addition, Defra's Deputy CSA chairs the Biodiversity subgroup of the Global Environmental Change Committee¹⁰⁴ which has roles in ensuring that UK Government policy is informed by the scientific evidence base and in identifying important knowledge gaps.

40. This level of CSA involvement is typical for policy areas within Defra. There are also areas of Defra policy where the involvement is more direct and involves providing advice to Ministers through direct assessment and challenge of the evidence base.

April 2006

APPENDIX 20

Memorandum from the Department for International Development

EXECUTIVE SUMMARY

The Select Committee asked for an update on how the Department for International Development has followed through on the recommendations made in their report "The Use of Science in UK International Development Policy" which was published in November 2004. The Select Committee asked that the update made special reference to the impact of the Chief Scientific Adviser, and the contribution he is making to the development of the new White Paper on International Development. In addition, this memorandum provides an update on specific action by the Department for International Development in response to recommendations for the Department since the Government's January 2005 response to the Select Committee report. The update uses the recommendation numbering of the original report.

2. Significant progress has been made since the Select Committee's report and the Government response. 2005 was a year in which the importance of science and technology for development was highlighted in international fora; the key role it can play being explicitly recognised in the UN Secretary General's report "In Larger Freedom", in the report of the Commission for Africa, and in the Millennium Review Summit. This momentum is set to continue and we particularly welcome the recent decision of the AU Commission to have science, technology and innovation as the theme of the January 2007 AU Summit of Heads of State and Government.

¹⁰³ NAO, 2001: Modern Policy-Making: Ensuring Policies Deliver Value for Money
http://www.nao.org.uk/publications/nao_reports/01-02/0102289.pdf

¹⁰⁴ http://www.ukgecc.org/dvl_Biodiversity.htm

3. DFID has equally made strong progress in responding to the Select Committee's specific recommendations. Professor Gordon Conway, the Department's first Chief Scientific Adviser, took up his post in January 2005. The Secretary of State announced a significant rise in DFID's research budget in a speech at the Smith Institute in London on 9 March 2005 where he said;

"Science and technology works; science and technology saves lives. And for that reason, I am especially pleased—and proud—to use the opportunity of this seminar to announce this morning that we will increase our Central Research Department spending by 58% over the next three years—from £86 million last year to £136 million in 2007–08. That's an extra £50 million per year. I hope this is very clear evidence that not only do we say it's important but we are also putting money in."

4. On 13 March 2006 the Secretary of State announced £100 million over five years to fund three new research initiatives in sustainable agriculture:

- a programme to promote the widespread use of research outputs from earlier DFID funded research (Research into Use);
- regional research programmes in Africa and Asia;
- joint programmes with UK research councils.

5. In addition DFID will continue with existing support of £20 million per annum to international research institutions. Hilary Benn said:

"New technology developed with the help of innovative research will give poor farmers the seeds, knowledge and the tools to make a better living for themselves and help lift their communities out of poverty. When farmers are successful the rest of the economy flourishes too. Investment in research today will lead to fewer people having to live tomorrow without basic healthcare, education or the many services we take for granted."

"2005 was an important year in the fight to defeat extreme poverty all over the world. By turning research into practical help for poor farmers we will be closer to making poverty history."

6. The Select Committee may also want to note recent examples of the impact of DFID funded research. These include:

- New DFID-funded research has shown for the first time that starting to breastfeed immediately after birth significantly increases the chances of survival of babies. Four million babies in the developing world die each year in the first month of life. If mothers start breastfeeding within one hour of birth, 22% of babies who die in the first 28 days, the equivalent to almost one million newborn children each year, could be saved. The research was carried out by the Kintampo Health Research Centre in Ghana and the London School of Hygiene and Tropical Medicine.
- For decades India's farmers have been fighting the invasive "mile a minute" weed, *Mikania micrantha*, which devastates whole fields of crops and plantations, grows at a rate of up to 9 cm per day (roughly the height of a double decker bus each month) and results in vast profit losses for farmers. Researchers in India and the UK have found a cost effective solution for both commercial and subsistence farmers. Research funded since 1996 by DFID's Crop Protection Programme has raised the hope of many farmers in the form of a rust, *Puccinia spegazzinii*, identified in Latin America. The rust fungus is a biological control agent that only attacks the mile-a-minute weed. The impact on farmers' livelihoods is immense—potentially increasing profits by 30%. In June 2005 the Indian Plant Protection Agency issued a permit that approved the release of the rust fungus on a limited scale in two Indian States. This is the first time an exotic biological control agent has been approved for release in India and South Asia.
- The front-line warriors in the battle against malaria are not always doctors or scientists. In Kilifi, near the Kenyan city of Mombassa, they are shopkeepers. DFID-funded research showed that when children in Kenya contract a fever, many parents go to their village kiosks to buy aspirin-based drugs. But if the fever is a symptom of malaria, these drugs are inadequate, and children can die as a result. Indeed 26,000 young Kenyan children die of Malaria each year. The Kenyan Shops Programme, resulting from the research, trains kiosk-owners to recognise the signs of malaria and recommend appropriate drugs—or a trip to the hospital. More than 250 kiosk-owners in Kilifi have now received training and the results are promising. Before the programme was introduced, antimalarial drugs were given only to 25% of children with malaria who were treated with drugs from a kiosk—and just 8% received the right dosage. Now, 50% receive antimalarial drugs and of these 60% take the right amount. The programme has been so successful that it now forms part of Kenya's national Malaria Strategy and is being introduced to five other districts where malaria is endemic.
- Crops are like children—give them a good start in life and they usually grow tall strong and healthy. But, if crops get off to a poor start because of poor soil conditions, they become stunted and sickly. Unfortunately, this is often the case in marginal areas of the semi-arid tropics where crops are commonly re-sown, which is expensive and can lead poor farmers into crippling debt. Research from DFID's Plant Sciences Research Programme has shown that "On-farm" seed priming, in which seeds are soaked for several hours before sowing, is a low-cost, low-risk

intervention that helps to promote germination and emergence in poor soils. Primed crops emerge faster and grow more vigorously. This alone is reason enough to adopt seed priming. In many cases, however, crops also flower earlier, which is very important in drought prone areas, mature earlier and give higher yields (on average 30% higher). Seed priming can also be used to further increase yield by as much as 90% by overcoming soil nutrient deficiencies (eg molybdenum, zinc and phosphate) and improving soil nutrient disease resistance. Since 1997, many thousands of farmers in south Asia and Africa have directly benefited from this research.

7. The consultation process for the new International Development White Paper has also provided a valuable opportunity for continued engagement by the UK and international scientific community.

IMPACT OF CHIEF SCIENTIFIC ADVISER

8. Since his appointment the Chief Scientific Adviser (CSA) has played an important role in DFID and has helped bring further scientific rigour to our evidence based policy making processes. He is a core member of the Development Committee, the key internal committee which:

- Provides oversight and direction on key policy and cross-cutting country issues across the Department;
- Promotes synergy between actions centrally, regionally and multilaterally where this can improve delivery; and
- Enables organisational learning on issues that have implications for the way we do business

9. The CSA has also been closely engaged, providing advice, support and guidance, with many of the policy groups within DFID; for example with the Global Environment team on climate change issues, with the Renewable Natural Resources and Agriculture Team on the agriculture and growth agenda, with the Water Energy and Minerals team and with the Conflict and Humanitarian teams on disaster risk reduction. He is closely involved with the work of Central Research Department. The Chief Scientific Adviser meets with Ministers regularly and has provided advice on issues such as avian influenza, early warning systems and water.

10. He has equally worked closely with regional divisions; most notably with Africa Division, in taking forward support to Africa's Science and Technology Consolidated Plan of Action which is being developed by the AU and NEPAD, and with Asia Division in taking forward their thinking on avian influenza as well as on the climate change agenda. His visits to DFID Country Offices—he has visited nine in the past year—have helped raise the profile of science and technology and of the contribution they can make to reaching the Millennium Development Goals.

11. The Chief Scientific Adviser provides a valuable interface between the Department and the UK science base. He has visited, or been visited by, many from key UK organisations and institutions, and has met many others in less formal situations. We particularly recognise the importance, and value, of keeping in touch with thinking in this key development community and this will continue to be a core part of his role. He has played an equally active part in the cross-Whitehall Chief Scientific Advisers Committee and Global Science and Innovation Forum.

12. The Chief Scientific Adviser has been engaged in discussions on the new International Development White Paper throughout the whole of its development process. He has been consulted by the White Paper team individually and as part of wider Departmental processes and has submitted contributions directly and through others who have contributed following discussion of the science and research agendas.

UPDATE ON "THE USE OF SCIENCE IN UK INTERNATIONAL DEVELOPMENT POLICY: GOVERNMENT RESPONSE TO THE COMMITTEE'S THIRTEENTH REPORT OF SESSION 2003–04":

6. We conclude that DFID has given insufficient consideration to how best to help developing countries identify their requirements for scientific and technological advice and research, and how to ensure that science, technology and research are represented appropriately in developing countries' Poverty Reduction Strategy Papers. Since Country Office staff are unlikely to have the full range of technical expertise or experience required to supply effective independent advice, DFID should work together with other donors to develop specific guidance on best practice in this area. (Paragraph 27)

As was recognised in the January 2005 Government Response, Poverty Reduction Strategies help governments focus public policy and public expenditure on the actions necessary to promote development and achieve the Millennium Development Goals. They aim to enhance country ownership and leadership of the development process and provide a framework for delivering more coherent donor support. DFID are working with the World Bank and others to help developing countries improve their policy analysis and reforms focused on accelerating growth.

DFID has supported the development of “Africa’s Consolidated Plan of Action for Science and Technology” which was agreed at the 2nd African Ministerial Conference on Science and Technology held in Abuja in September 2005. The Consolidated Plan of Action will help take forward an African-led approach to financing and implementation of science and technology by national governments. It will also help to look at how science and technology plays an important role across sectors such as agriculture and health, and in the generation of evidence-based policy making by governments.

8. *We urge DFID to develop clear guidelines to inform decisions on the balance between short-, medium- and long-term aid as well as clear country[en rule]specific policies with respect to this balance. (Paragraph 31)*

Predictability is key in countries with high aid dependency and which need to increase recurrent expenditures to achieve the MDGs. DFID is taking steps to improve the predictability of its aid by developing ten-year “Development Partnership Arrangements”, which normally include financial commitments up to three years ahead, and being clear about the conditions that are attached to DFID’s aid. DFID’s policy on conditionality focuses on striking a careful balance between ensuring that aid is used effectively and making aid more predictable. We will consider interrupting aid or changing the way in which aid is delivered where there is significant deterioration in commitment to poverty reduction. Precisely how we respond depends on the severity of the particular event, the trend of change and the impact that any decision will have on poor people and longer term poverty reduction efforts. To protect predictability, our policy is to respond early to a possible problem by discussing the issues with the partner government to assess the overall situation and whether the event constitutes a breach of fundamental conditions. We only suspend aid in-year in exceptional circumstances. At the level of individual aid instruments, DFID is increasingly adopting rolling multi-year Poverty Reduction Budget Support arrangements. DFID’s internal guidance on the choice and mix of aid instruments—including Poverty Reduction Budgetary Support, projects, technical cooperation and grants to civil society—is currently being revised.

9. *We are pleased to hear DFID acknowledge the importance of science, technology and research for achievement of the Millennium Development Goals, but we are not convinced that these words have been translated into policy or practice. We remain concerned that technology-intensive areas such as infrastructure, energy, water and sanitation are at risk of being neglected by DFID and other donors due to their omission from the headline Millennium Development Goals. (Paragraph 35)*

The links between infrastructure and achievement of the Millennium Development Goals are now receiving greater and wider recognition, with DFID actively involved in the promotion of increased investments and improved donor coordination. Examples include DFID’s lead in setting up an Infrastructure Consortium for Africa, with representation from international and African financial institutions and donors, aimed at meeting the urgent infrastructure needs of Africa. We are also working closely with the World Bank on an Investment Framework for Clean Energy and Development, which includes new technologies, aimed at helping developing countries meet rising energy demand in an environmentally sustainable way. Both these examples were an outcome of the 2005 G8 Gleneagles Summit.

Using DFID’s inputs on water, energy and transport, the OECD Development Assistance Committee completed its report in March 2006 “Guiding Principles for Using Infrastructure to Reduce Poverty”. The report will be published this year and is expected to be basis for future donor involvement.

We are setting up consolidated resource centres for expert advice and analysis covering all the main infrastructure areas, including water, transport and energy. These will be in place this year, with existing resource centre arrangements continuing in the meantime.

DFID is increasing its research efforts in Water and Sanitation, having invited proposals to undertake a new research programme over the next five years, commencing in 2006. In addition we are working with the EU coordinating the work of Member States on water and sanitation research, including dissemination of the outputs for developing countries. Options for further work are being considered. The Secretary of State announced in March 2005 that “DFID will double over the next three years its funding (both bilateral and multilateral) for improvements in water and sanitation in Africa; up from £47.5 million this year to £95 million in 2007–08.”

On energy, we are inviting expressions of interest for the design and implementation of a new research programme on Energy for Development, aimed at improving access to energy services in support of growth and poverty reduction. Subject to receiving satisfactory responses, the programme will run for five years.

For transport, in 2005 DFID helped inaugurate the Global Transport Knowledge Partnership (gTKP) aimed at improving investment decisions for transport infrastructure and services. We support a successful South East Asia Community Access Programme (SEACAP), and hope to build on it with a similar programme in Africa.

12. *We support DFID's increasing emphasis on the role that public-private partnerships can play in facilitating research for development where costs would otherwise be prohibitively high, or there would be no incentive for private sector involvement, and where the benefits are clear for the developing country partners. (Paragraph 43)*

DFID's Research Funding Framework identifies public private partnerships as a key mechanism, especially in health and agriculture. DFID commissioned a study on "Leveraging Private Sector Research" as part of the preparation process for the development of its Research Funding Framework.

DFID has increased its funding of not-for-profit public private partnerships—increasing funding for the International AIDS Vaccine Initiative, the Medicines for Malaria Venture and the International Partnership for Microbicides, and adding support for the TB Drugs Alliance and the Drugs for Neglected Diseases Initiative. DFID is also supporting the emergence of a Global Alliance for Livestock Vaccines. We have also produced guiding principles for the future funding of health public private partnerships, based on our experience to date.

22. *We can only surmise that research has not received the attention it merits in DFID in the past. We hope that this new arrangement will indeed be an improvement. DFID will also need to take care that separation of the Policy Division and Central Research Department does not impede the interaction between research and policy-making in DFID. (Paragraph 67)*

The significant increase in our research budget announced in 2005 confirms the importance given to research by DFID. DFID recognises the need for very good channels of communication between Policy Division and Central Research. Both groups hold regular meetings to discuss work and priorities. Central Research Department has increased opportunities for Policy Division Teams to interact with external researchers. For example, external researchers provided a key resource at a recent Horizon Scanning meeting facilitated by Policy Division to feed into thinking about DFID's long term priorities and the new International Development White Paper. Policy Division Teams have good relationships with Central Research Department on specific issues, for example, global AIDS policy, Access to Medicines and Renewable Natural Resources and Agriculture. Policy Division advisers also sit on advisory boards of research programmes relevant to their work and expertise.

24. *We appreciate that DFID considers the research that it commissions to be for the global good, but it should be axiomatic that such research will also be utilised for the development and refinement of DFID's own policies. (Paragraph 71)*

See answer to question 22. It is also an ongoing area of interest to DFID's Chief Scientific Adviser.

In addition, DFID is about to launch a free, online research portal that will bring together all information on its research, including access to reports and publications. This will better inform a wide range of development practitioners and developing country partners of the outcomes of DFID-funded research. The portal will also be a new channel for DFID's own staff to use research outputs, and the Communications Team in Central Research Department has a programme to make staff aware of it and encourage its use.

26. *DFID and its clients are not getting the most out of the research it commissions due to the poor links between the Central Research Department and the Country Offices. We recommend that the Central Research Department work more closely with the Heads of Profession and regional departments to ensure that Country Offices receive the information they require, in a readily digestible form. (Paragraph 74)*

The new research portal, described in the reply to para 24 above, has been designed to meet this need. It will be a major new channel for country office staff to acquire readily digestible information from DFID's research.

In addition, Central Research Department staff regularly make visits to DFID offices in countries where there is considerable research underway. A formal agreement on ways of working together between Central Research and the country office has been piloted in Ghana, and similar arrangements will be made during 2006 for India, South Africa and Kenya.

27. *We recommend that DFID stipulates in its research contracts that researchers must make their research results, including any large data sets collected, publicly available within a reasonable period following completion of the work. (Paragraph 75)*

In the light of the recommendation by the Select Committee, the contracts for new research programmes require that at least 10% of the total budget for the project must be used to promote the communication, dissemination and uptake of research, to ensure the output has an impact in reducing poverty. In addition, DFID has inserted in the contracts a non exclusive irrevocable royalty-free world-wide licence for DFID to use transfer or otherwise deal with the intellectual property produced in the research; this could be used if researchers were not to publish their research. Researchers are also required to submit their publications to be published on DFID's research portal.

DFID's research portal will enable long-term access to the outputs of research we have funded. The research portal will adopt international standards and norms, for example in the use of internationally agreed metadata, that will enable other systems, such as those managed by the United Nations, to find and point to relevant DFID information via the Internet. New research contracts will require information to be provided by researchers to ensure the research portal remains up-to-date and comprehensive.

32. *We conclude that DFID has failed to devote sufficient attention to evaluation of research. DFID must ensure that its past deficiencies in evaluation of research are rectified. We welcome the fact that DFID is strengthening its evaluation department and is now undertaking evaluations of two major research programmes in renewable natural resources and engineering, and also note that DFID's recent publications, such as the new HIV/AIDS Strategy, Taking Action, place greater emphasis on evaluation. However, resolving this problem will require a culture change within DFID as well as good intentions and the increased resources already at its disposal. (Paragraph 86)*

Since the Government Response was published Central Research Department has set up a Monitoring and Evaluation Group, which includes the Head of DFID's Evaluation Department. This group is about to publish a set of guidelines which will be used across the Central Research portfolio.

35. *It is highly regrettable that DFID appears to have given so little attention to gaining developing country input to the Research Strategy. DFID's failure to incorporate the views of developing countries into the Strategy makes a mockery of its claim to follow a demand-led approach and calls into question the value of the Strategy. (Paragraph 92)*

Since the Government Response was published scoping work for new climate change research has been undertaken extensively in developing countries, DFID is currently holding a series of workshops in Africa to help design elements of its new Sustainable Agriculture Research Strategy.

37. *It is a source of alarm that DFID did not seek to learn the lessons of its £200 million investment in the Renewable Natural Resources Research Strategy Programme prior to the development of a new Research Strategy. This is suggestive of poor planning and management. DFID's decision to develop a new Research Strategy at this time, in the absence of key information and a DFID Chief Scientific Adviser, was imprudent. (Paragraph 94)*

The Evaluation of the Renewable Natural Resources Research Strategy (RNRRS) has been published on the DFID website. It has informed the design of the new £100 million Sustainable Agriculture Research Strategy, which Hilary Benn launched at the beginning of March. The Strategy consists of:

- a programme to promote the widespread use of research outputs from earlier DFID funded research (Research into Use);
- regional research programmes in Africa and Asia;
- joint programmes with UK research councils

The Research-Into-Use Programme will identify up to 30 successful technologies and practices generated from research funded by DFID as part of the Renewable Natural Resources Research Strategy over the last 10 years, and will aim to promote their widespread use in Africa and south Asia. Technologies will be selected only if they have the potential to increase farmers' incomes, reduce poverty for the community, halt environmental degradation, and/or increase food security. Lessons from the programme will be collected and shared to show how responsible forestry, fishing, farming and livestock rearing combined with new, useable technology can help reduce poverty. DFID's Chief Scientific Adviser contributed to the programme design process and chaired the event on 13 March at which the Sustainable Agriculture Research Strategy was launched.

39. *A high priority for DFID's new Chief Scientific Adviser must be to develop a coherent policy on science, technology and research that encompasses issues such as the provision of scientific and technical advice to DFID and the effective use by DFID of scientific knowledge and research results to promote innovation. (Paragraph 96)*

The development of a Science and Innovation Strategy remains high on the list of priorities for the Chief Scientific Adviser. To assist the development of this strategy an extensive consultation process, which drew a large number of high quality contributions, was undertaken in 2005. The results of this consultation have helped inform the contributions the Chief Scientific Adviser has made to the development process for the new International Development White Paper.

43. *DFID should commit significant extra funding specifically for capacity building, over and above the existing research budget. In addition to the funds for capacity building that are currently channelled through the central research budget, DFID Country Offices should play a much greater role in capacity building. However, a*

major collective international effort with a long-term horizon is vital for sustainable science and technology capacity building to be effected on the scale required. DFID should take advantage of its leadership roles in NEPAD and the Commission for Africa, as well as the forthcoming UK Presidencies of the G8 and EU, to call for an international science and technology capacity building strategy supported by the necessary resources. (Paragraph 106)

DFID continues to recognise the importance of countries building up expertise and experience in science and technology. Our work is based around national and regional initiatives. In September 2005, African countries agreed a five year Consolidated Plan of Action for Science and Technology with an initial funding target of US\$160 million over a five year period. DFID has provided funding to support the development of the Plan. With other donors, we are discussing with African partners, and in particular with the NEPAD Office of Science and Technology, how we can best support implementation of the Plan; and we will be looking at a significant contribution to its funding. The AU and NEPAD envisage an 'African Science and Innovation Facility' being developed to channel funding for pan-African flagship research and development programmes. In this regard we also welcome the recent decision of the AU Commission to have science, technology and innovation as theme of the January 2007 AU Summit of Heads of State and Government.

51. Investment to strengthen the whole system of innovation in developing countries is required to make research more effective. Capacity building of national research systems must therefore encompass reinforcement of knowledge transfer and dissemination mechanisms. (Paragraph 132)

DFID investments in this area continue to include support for the African Agricultural Technology Foundation (AATF) using the local private sector to bring innovations to market. The new Sustainable Agriculture Research Strategy mentioned above, explicitly addresses these issues through its focus on research into use and on supporting existing regional research structures.

The Communications Team of Central Research Department commissions a range of programmes that will directly strengthen innovation systems. This ranges from providing free online access to scientific journals through Access to Global Online Research in Agriculture (AGORA), Health Internetwork (HINARI) and the Programme for the Enhancement of Research Information (PERI), to supporting the media's ability to utilise scientific evidence in public debate and in the way in which it challenges government. The Team is also using the media to help raise awareness of research findings, for example by integrating research messages into a Television Soap drama: Makutano Junction. The drama series aims not only to entertain audiences, but also to communicate useful information that relate to day to day life, for rural and peri-urban people. Each episode contains important, topical information that rural dwellers have identified as being of interest and relevance to them. There have been episodes about malaria prevention and control, safe sex, parental management of local schools and the care and management of donkeys DFID will also advocate for international bodies, ranging from the CGIAR to the WHO, to focus on promoting national systems of innovation and their access to information.

52. Investment in Information and Communications Technology, for example to grant institutions in developing countries reliable access to the internet, is money well spent and we encourage DFID to give such support high priority. Failure to address inadequacies in ICT infrastructure and equipment can negate the benefits of other investments in capacity building: effective science and research require access to the global pool of knowledge, and isolated researchers are likely to flounder without both scientific and moral support from their peers. For the same reasons, DFID should also continue to support networks that include researchers in developing countries. (Paragraph 135)

Since the Government Response was published, DFID has supported the development of a Research Africa newsletter, which would help resource networks of research managers in Africa.

DFID is in the process of evaluating its existing portfolio of ICT research projects and is in discussion with the Canadian International Development Research Centre and the World Bank about partnering to commission a new ICT research programme that will potentially be funded through a network of developing country researchers.

All new DFID Research Programme Consortia commissioned by DFID are required to include at least 3 developing country institutes. Recent new consortia have signed up over 30 of the leading research institutes in Africa.

59. Determining the extent of any brain drain of scientists, researchers and scientific and technical support staff from developing countries, and understanding the consequences of this migration for international development, require further research and data collection. At the very least, UK Government departments should monitor the numbers of migrants from developing countries in their employment and the destinations of developing country award holders for scholarships that they sponsor. However, a far more powerful evidence base could be built if other countries were willing to engage in a long-term international study of the mobility of scientists and researchers from developing countries. We recommend that DFID take the lead in calling for the initiation of such a study by the UN or another international agency. (Paragraph 146)

DFID is continuing to build, with others, the evidence base on the links between migration and development. This includes the impact of the migration of highly skilled people from developing countries. DFID plans to publish a policy paper in the summer of 2006 which draws together some of the evidence and sets out some ways in which DFID plans to respond. The paper is currently in draft and is available at www.dfid.gov.uk/consultations/.

The meeting of the UN High Level Dialogue on International Migration and Development in New York in September will focus international attention on the multi-dimensional links between migration and development. The Report of the Global Commission on International Migration, *"Migration in an interconnected world: New directions for action"* provides part of the backdrop for the Dialogue. Amongst other things, it argues that given the changing pattern of international migration, the notion of "brain drain" is somewhat outmoded as it implies that a migrant who leaves his or her country will not go back there. It suggests that in the current era there is a need to capitalise on the growth of human mobility by promoting the notion of "brain circulation" in which migrants return to their own country on a regular or occasional basis, sharing the benefits of the skills and resources they have acquired while living and working abroad. The Government will actively engage in further discussions on this and other aspects of migration and development at the Dialogue.

61. *There is clearly scope for better alignment and co-ordination of FCO and DFID activities. Although we welcome the willingness of the FCO to explore these opportunities, we regret the fact that this has not happened before. As well as coordination between the central Government departments, there is much to be gained from interaction between the FCO and DFID at country level. (Paragraph 155)*

The appointment of a Chief Scientific Adviser in DFID has helped improve the dialogue between the two Departments. Both Departments are members of the Chief Scientific Advisers Committee (CSAC) and the Global Science and Innovation Forum and contact in these groupings and outside has facilitated discussion of opportunities for collaboration.

65. *The Funders' Forum could be a very useful vehicle for promoting co-ordination of UK-funded research for development. In view of the large numbers of potential participants, we recommend that the Funders' Forum be subdivided by sector or theme to prevent it becoming too unwieldy. However, we remain highly concerned that DFID has not made sufficient provision for eliciting input from developing countries and do not see that the Funders' Forum as proposed will ameliorate this problem in any way. (Paragraph 168)*

An initial meeting of a broad range of UK funders of international development research was held in 2005. It was agreed that there would be an annual meeting of this group, with the first formal meeting planned for September 2006. An annual report of funders' international development activities will be prepared for this meeting and work is underway to develop an online information system that will enable sharing of research, activities and policy by UK funders. DFID also participates in both the Environment Research Funders' Forum and a Funders' Forum for health in developing countries. The Funders' Forum is explicitly a UK body, and not intended as a way of collecting input from developing countries, which we agree requires different instruments.

69. *We consider that DFID was rash in untying research funding without eliciting firm commitments from other countries that they would also adopt that policy over an agreed timescale. The current situation poses a threat to the sustainability of the UK development sciences research base and has therefore resulted in feelings of distress and disappointment towards DFID in the research community. Having taken this course of action, DFID must now redouble its efforts to persuade other countries to untie their research funding. (Paragraph 179)*

Since the Government Response was published, the European Community has agreed to untie all aid to Least Developed Countries and also untie all food aid. The OECD's Development Assistance Committee has a commitment to continue to make progress on untying in the Paris Declaration on Aid Effectiveness (March 2005). We continue to promote efforts to untie Aid from other donors.

71. *We strongly encourage the building of North-South partnerships in science, technology and research. (Paragraph 183)*

The new higher education partnership scheme, DELPHE, will be launched in April 2006. This will replace the current Higher Education Links scheme (1981–2006) which will be completed in March 2006. It is funded by DFID with support from the British Council and HE institutions in the UK and overseas. DELPHE will support a variety of partnerships between HE institutions, enabling them to collaborate in activities linked to sustainable development, poverty reduction and science and technology in DFID's 25 priority focus countries across Africa and Asia.

Expected activities include initiatives for skills development, knowledge sharing, problem solving research and other activities that will contribute towards achieving the Millennium Development Goals (MDGs).

It is also expected that there will be South-South as well as North-South partnerships. Proposals for projects will be led by a partner in one of DFID's 25 bilateral focus countries. These lead partners will be responsible for managing the projects, normally over a three year period, a task which in itself will contribute towards building capacity within participating HE institutions.

DFID is making £15 million available for DELPHE, over a seven year period. The programme will be managed by the British Council, drawing on the resources of its overseas network. The Association of Commonwealth Universities (ACU) will assist by disseminating and gathering information through its networks of universities and scholars and by promoting DELPHE to Commonwealth Scholar alumni.

DFID has also built links between Northern and Southern Institutes into its new Research Programme Consortia, whereby a bid for such a consortia must include at least three developing country partners.

75. We are of the view that the UK Research Councils can play an important role in funding research for international development and consider that such research is highly likely to deliver additional, incidental benefits for the UK. The Research Councils should adopt a clear and consistent approach to the funding of scientific and technical research for international development. (Paragraph 196)

DFID has set up a new responsive research programme jointly with the ESRC that will allow access to research grants by UK institutions. DFID have approached BBSRC and NERC for two more, within the new Sustainable Agriculture Research Strategy. We have a long term concordat with the MRC. Establishment and membership of various funders forums mentioned above provides DFID with opportunities to discuss such issues. DFID is also leading ongoing discussions with HEFCE and the Research Councils.

77. We propose that a cross[en rule]cutting Development Sciences Research Board be established with a mandate to award grants for development sciences R&D to UK-based institution. (Paragraph 198)

and

78. We believe that the recent substantial increases in the aid budget would be complemented by a commensurate increase in the availability of funding for development sciences R&D in the UK, in order to strengthen the evidence base available for international development policy-making, and to safeguard the UK's ability to maintain a leadership role in this field. We estimate that an initial budget of approximately £100 million per annum would be required for the Development Sciences Research Board to fulfil its role effectively. (Paragraph 201)

A development sciences working group, chaired by Sir David King and including Sir Gordon Conway, has met three times since July 2005. Following an initial analysis the group has commissioned further work to assess the current state of the UK development science research base and its future prospects, and to identify what, if any, impact this will have on strategic UK objectives.

The team undertaking this work will also look at the potential for the establishment of a Development Science Research Collaboration, along similar lines to the existing Clinical Research Collaboration, and explore the options for its role and responsibilities and its membership and governance.

The results of this work are expected to be made available to the development sciences working group in the early summer and is expected to provide necessary information for any potential bid for funding for development science as part of the Comprehensive Spending Review.

March 2006

APPENDIX 21

Memorandum from the Department for Communities and Local Government (DCLG)

SUMMARY

1. The Committee has asked for a memorandum on the steps the Department takes to ensure the effective monitoring of the scientific advice on the risk of flooding given by the Environment Agency in respect of planning applications. DCLG has neither the resources, remit nor technical competence to monitor the Environment Agency's advice on flood risk to planning authorities. The HLT5 report (see 4 below) indicates that nearly 14,000 applications were referred to the Environment Agency for advice on flood risk in 2004–05. Defra, as sponsor of the Environment Agency, has responsibility to monitor the overall soundness of the

Agency's advice, and its underlying data and mapping systems. It is then for local planning authorities to satisfy themselves that advice they receive from the Environment Agency on planning applications is fit for purpose and scientifically robust, when taking due account of that advice in making planning decisions.

ROLE OF DCLG

2. DCLG is responsible for the statutory definition of the planning system in England, and setting out the Government's planning policy, including on development and flood risk in England. This is currently set out in Planning Policy Guidance Note (PPG)25, and is now being revised in draft new Planning Policy Statement (PPS)25.

3. PPG25 states that local planning authorities should take account of advice from the Environment Agency on flood risk. Annex gives details.

4. DCLG monitors at national level how local planning authorities are responding to Environment Agency advice on planning applications through statistics produced annually by the Agency in the High Level Target (HLT)5 report. High-level targets for flood and coastal defence were introduced by MAFF in 1999 as part of the response to the Easter 1998 floods. High Level Target 5 (formerly HLT12) requires the Environment Agency to report annually to DEFRA and DCLG on policies in development plans and responses to planning applications. The HLT5 report is prepared jointly by the Environment Agency and the Local Government Association. Key indicators are:

- the number of planning applications permitted by LPAs where the outcome is known against a sustained objection from the Environment Agency on flood risk grounds, as a percentage of the total number of applications to which the Environment Agency sustained an objection on flood risk grounds;
- the number of planning applications for major development permitted by LPAs where the outcome is known against a sustained objection from the Environment Agency on flood risk grounds, as a percentage of the total number of planning applications permitted against sustained Environment Agency advice on flood risk;
- the lack of a FRA or an inadequate FRA cited as the reason for an Environment Agency objection to planning applications as a percentage of the total number of its objections on flood risk grounds;
- the number of decision notices received from LPAs by the Environment Agency as a percentage of the number of objections the Environment Agency made to planning applications on flood risk grounds; and
- the number of cases in which LPAs re-consulted the Environment Agency on flood risk issues as a percentage of the number of planning permissions granted against Agency advice on flood risk.

5. We would raise significant matters with the Environment Agency and, if necessary, with Local Government collectively (eg with the Local Government Association and the Planning Officers' Society). Matters of specific concern to individual local authorities could be raised directly with the local authority

ROLE OF DEFRA

6. The Secretary of State for the Environment, Food and Rural Affairs has the lead sponsorship responsibility for the Environment Agency as a whole and the Agency is accountable to her for its day to day operations in England.

7. Defra Ministers hold the Environment Agency to account for the achievement of the targets and objectives in the Agency's Corporate Plan, and as reported in the Annual Report. The Agency is regularly held to account by reporting processes and reviews and produces twice-yearly reports on performance and targets to Defra. In addition, Defra Ministers also hold twice-yearly performance review meetings with the Chairman and Chief Executive to hold the Agency to account.

8. The Agency was established a non-departmental public body (NDPB) and it operates at arm's length from Government. It also has a role as champion for the environment and independent advisor on environmental matters affecting policy-making, both within Government and more widely. The advisory role is based on the Agency's technical expertise and operational knowledge.

ROLE OF LOCAL AUTHORITIES

9. All planning applications are decided on their individual planning merits with reference to the local authority's development plan and other material considerations. In deciding whether or not to grant planning permission, decision-makers must check whether the development plan for the area contains policies which are relevant to the proposed development. Such material policies may give support to a proposed development in a particular location or show that it is not appropriate. If there are no other material considerations, the application should be determined according to the development plan. Where

there are other material considerations, the development plan should still be taken as a starting point but the other material considerations should also be weighed in reaching a decision. Responses from consultees may be a material consideration, but it is for local planning authorities to judge the weight they are given.

April 2006

Annex

PPG25 advice to Planning Authorities on consulting the Environment Agency

10. Paragraph 13 of PPG25 advises local planning authorities that “When preparing development plans and considering applications for planning permission, they should consult and take into account advice from the Environment Agency, which should incorporate the latest information on climate change”.

11. Paragraph 63 emphasises this advice, stating: “When they receive planning applications which they believe raise flooding issues . . . local planning authorities should . . . consult the Environment Agency. The Agency is a statutory consultee for some developments . . . but the need to consult them in relation to flooding issues covers a much wider range of development”.

12. Paragraph 63 goes on to say: “Where run-off considerations are likely to be significant, authorities should consult the Environment Agency . . . on the capacity of existing drainage systems, the feasibility and desirability of using sustainable drainage systems and the impacts of discharges into watercourses”.

13. Paragraph 64 states that: “Government expects the Environment Agency . . . to respond to consultations on the flooding aspects of planning applications within 21 days. . . . In responding to consultation, the Agency . . . will consider the risk of flooding at the proposed site, the impact on flooding elsewhere or the impact of flood alleviation works on other property or nature conservation interests. It may then indicate that the proposal is acceptable, advise on conditions or modifications to make it acceptable, seek more information to enable a decision to be taken or object that the application is not acceptable and cannot be made so by attaching conditions or seeking modifications.

14. Further to this, paragraph 65 states that: “Where they [the LPA] conclude that other material considerations outweigh the objection of the Environment Agency or other consultees on flooding issues, local planning authorities should inform them that they are minded to grant permission and the reasons for doing so and give them the opportunity to make further representations. . . . It is important that where objections are maintained, this can be justified as reasonable in all the circumstances.”

15. Finally, Paragraph 66 advises that: “Consultees making and sustaining objections to development proposals on flood-risk grounds should bear in mind that they may be called upon to maintain their objections in any appeal by an applicant against the refusal of permission or the imposing of conditions based on their advice. In view of the increased weight that the Government wishes to be given to flood risk in the planning process, it is obviously important that objections on flood-risk grounds are well founded and will stand scrutiny on appeal”.

APPENDIX 22

Memorandum from William Solesbury, Senior Visiting Research Fellow, ESRC UK Centre for Evidence Based Policy and Practice, Kings College London

INTRODUCTION

1. This memorandum draws on the work of the ESRC UK Centre for Evidence Based Policy and Practice at Kings College London as it relates to the questions being addressed by the Committee’s inquiry. The Centre’s remit is to analyse the diverse ways in which evidence—including scientific, social scientific and other research, enquiry and debate—is used in public policy. To that end it has undertaken, over the last five years, a programme of research, training, consultancy and resource provision (in part funded by the Economic and Social Research Council—

- *Research* projects have been concerned with the public debate about GM crops and foods; the nature and uses of evidence in the audit, inspection and scrutiny functions of government; the conduct of research reviews; the development of a new “realist” approach to the synthesis of evidence; the nature and quality of knowledge within social care; the assessment of research quality; the contribution to the work of government departments of officials and board members from outside the civil service; and the role of strategic thinking in government.
- *Training* has been provided for clients including the National School of Government, the National Audit Office, and the Social Care Institute of Excellence and for researchers and postgraduate students supported by the Economic and Social Research Council.
- *Consultancy* clients have included the Parliamentary Office of Science and Technology, the Learning and Skills Development Agency, and the National Centre for Social Research.

- The Centre functions as a *resource centre* through its website which includes inter alia a guide to many databases of published research and other resources for evidence based policy and practice and an extensive searchable bibliography of publication on evidence based policy.
- The Centre also edits the journal *Evidence and Policy*, published by Policy Press.

More details of most of this work can be found on the Centre's website: www.evidencenetwork.org. This memorandum now addresses the questions in the Committee's inquiry brief.

SOURCES AND HANDLING OF ADVICE

2. Government departments secure scientific (including social scientific) advice through a number of modes—

Through standing or ad hoc scientific advisory bodies.

Through commissioning new research externally from academic or other centres.

Through searching existing published research.

There has been a notable increase in departmental research budgets for commissioned research over the last decade. There has also been a growing interest in the practice of “systematic reviews”, that is, searching published research in a rigorous way and seeking to establish the present state of scientific knowledge relevant to a particular policy question. Some believe that this has the potential to offer more comprehensive, speedier and cost-effective evidence than the other two modes. However, our research on systematic reviewing¹⁰⁵ and our experience in contributing to reviews suggests that the practice of commissioning, undertaking and using such reviews often underestimates the time, money and skills needed for such reviews. It also shows that policy makers can find the results difficult to interpret and apply.

3. All these ways of securing scientific advice depend on an in-house capability to handle it—identifying when science can contribute to policy, seeking it out from a wide range of sources and interpreting its relevance to policy. This should be a prime role of departmental scientific and social research staffs who can act as “brokers” between science and policy. But our training and consultancy experience suggests that this role is underdeveloped in departments. It is also important that mainstream civil servants develop an understanding of what science can contribute, and crucially when that contribution is needed. The recent work on Professional Skills for Government has recognised this in the new competency frameworks that have been developed.¹⁰⁶ Among the core skills for staff at Grade 7 and above are Analysis and Use of Evidence (the others are Financial Management, People Management and Programme and Project Management). This is laudable, but insufficient. Skills alone are not the problem. Attitudes need to change too. Our research on the experiences of outsiders recruited into Whitehall, mostly in quite senior positions, revealed that many of them struggled to gain recognition from their insider colleagues of the expertise they brought with them; and some left quite quickly.¹⁰⁷

RELATIONSHIP BETWEEN SCIENTIFIC ADVICE AND POLICY DEVELOPMENT

4. Although the term “evidence based policy” has gained currency in recent years (and is reflected in the title given to our Centre by the ESRC in 2000), our experience suggests that it misrepresents the relationships between evidence and policy. “Evidence informed policy” is nearer the reality. Our current research on the role of strategy in government¹⁰⁸ reveals the continuing interplay between “facts” and “values” that characterises policy activities. In our training work we find that the “Four Is” framework (originated by the US evaluator Professor Carol Weiss)¹⁰⁹ helps practitioners to place evidence appropriately. It states that policy is the outcome of the interaction of Ideologies, Interests and Information (that is, evidence) within the context of Institutions where:

- Information is “the range of knowledge and ideas that help people make sense of the current state of affairs, why things happen as they do, and which new initiatives will help or hinder”;
- Interests are essentially “self-interests”;
- Ideologies are “philosophies, principles, values and political orientation”;

¹⁰⁵ Annette Boaz, William Solesbury and Fay Sullivan (2004): *The practice of research reviewing 1. An assessment of 28 review reports* ESRC UK Centre for Evidence Based Policy and Practice, Working Paper No 22; available via www.evidencenetwork.org; also Annette Boaz, William Solesbury and Fay Sullivan (forthcoming): *The practice of research reviewing 2. 10 case studies of reviews*, ESRC UK Centre for Evidence Based Policy and Practice, Working Paper No 24.

¹⁰⁶ See http://psg.civilservice.gov.uk/skill_selection.asp

¹⁰⁷ Ruth Levitt and William Solesbury (2005), *Evidence-informed policy: what difference do outsiders make in Whitehall*, ESRC UK Centre for Evidence Based Policy and Practice, Working Paper No 23; available via www.evidencenetwork.org

¹⁰⁸ This is part of an international comparative study of Strategy and Politics funded by the German Bertelsmann Foundation; it will report later in 2006.

¹⁰⁹ Carol Weiss (1995), “The four ‘I’s’ of school reform: how interests, ideology, information and institution affect teachers and principals”, *Harvard Educational Review* 65(4) pp 571–592.

- Institutions are doubly important: “first the institutional environment shapes the way in which participants interpret their own interests, ideologies, and information. [...] Second, organisational arrangements affect the decision process itself, such as who is empowered to make decisions.”

This framework also proved fruitful in our analysis of policy making on GM foods.¹¹⁰ We found that, because the Four Is are in dynamic interaction creating mutual influences that repeatedly interweave, decisions and outcomes become progressively reshaped. This requires stakeholders to reposition themselves in relation to each other, the evidence, the decision process and the policy and practice outcomes.

5. Government must be concerned about the quality of scientific evidence for policy work. Its commitment to quality assurance is one of the distinct strengths of scientific research as a source of evidence for policy. But for this purpose it is important that methodological considerations of validity and reliability are complemented by utilitarian considerations of relevance and accessibility. For example, our work on the practice of research reviewing has revealed a far too casual approach to the use of evidence (particularly social science findings) from other countries without adequate regard to contextual differences. More generally, from our work we would argue for the concept of “fitness for purpose” as the appropriate measure of quality for scientific evidence for policy, meaning that the science should be methodologically good enough for the weight to be attached to it in informing policy.^{111, 112}

6. Our training and consultancy work has revealed tensions between scientists and government about the interpretation and application of research findings. The details of each case differ. But overall there is a need to pay adequate prices for commissioned research, to allow researchers adequate time to undertake the work rigorously, and to expect them to report “as they find”. If government decides—for whatever reasons—to act in ways that contradict or are unsupported by scientific advice, then it should do so without seeking to misrepresent the evidence. We note with interest the proposals from HM Treasury to safeguard the objectivity and impartiality of National Statistics.¹¹³

TREATMENT OF RISK

7. Our research on strategy in politics confirms the observation that policies often fail for one of two reasons: unforeseen changes in context or unintended consequences of the policy itself. Effective policy work requires an initial assessment of the risks of both as part of policy development and constant alertness to either occurring through policy monitoring. This suggests to us that assuming research on “what works” will deliver “evidence based policy” is dangerously naive. Research is needed not just to show “what works” but also why policies work (or not), and what we understand of current phenomena and likely future trends in shaping policies and outcomes. Horizon scanning research can help the latter, but such research must be concerned as much with societal as technological trends.

TRANSPARENCY, COMMUNICATION AND PUBLIC ENGAGEMENT

8. Most government departments have a commitment to publish the research they commission—in print and/or electronically. That degree of openness does not apply to the other two modes in paragraph 2 above (scientific advice, and internal reviews of existing research). What is not, understandably, transparent is how scientific research has been interpreted and applied in policy work. In these circumstances it is all too frequently the case that suspicions arise about the misuse of scientific evidence, maybe fuelled by the media. Only openness by government about how it has weighed such evidence (the Information I in the “Four Is” framework in paragraph 4 above) against other considerations will allay such suspicions. For example, for the decision on GM crops, the specially constructed evidence base our research examined was put into the public domain. It was not all exactly fit for the government’s purpose. The government had a priori decided to give “science” pre-eminence and greater weight over other types of evidence. In the event the science was interpreted to give the government insufficient grounds for supporting immediate commercialisation of the three test crops. On the wider decision about how to sustain competing choices (GM/conventional/organic) in the face of competing interests and ideologies, the special evidence base was mostly of little use. It arrived too late to add anything crucial, and well after stakeholders’ views had already shifted strategically.¹¹⁴

¹¹⁰ Ruth Levitt (2003): *GM Crops and Foods: Evidence, Policy and Practice in the UK; a case study*, ESRC UK Centre for Evidence Based Policy and Practice, Working Paper No 20; available via www.evidencenetwork.org

¹¹¹ Annette Boaz and Deborah Ashby (2003), *Fit for purpose? Assessing research quality for evidence based policy and practice*, Working Paper 11, ESRC UK Centre for Evidence Based Policy and Practice, Working Paper No 22; available via www.evidencenetwork.org

¹¹² This argument is similar to that used by the National Audit Office in its VFM work where it adopts the criteria that evidence should be relevant, reliable and sufficient. See National Audit Office, *Value for Money Handbook—a guide for building quality into VFM examinations*, page 16.

¹¹³ H M Treasury (2006), *Independence for Statistics: a consultation document*, available via www.hm-treasury.gov.uk/budget/budget_06/other_documents/bud_bud06_odstatistics.cfm

¹¹⁴ The then Secretary of State, Margaret Beckett, said “The UK is neither pro nor anti GM. We are pro consumer safety and choice and pro protection of the environment. [...] The challenge for any government is to regulate the use of this new technology in a way that safeguards the public and our planet, commands public confidence, but also ensures that our society does not unnecessarily throw away the benefits science can provide. This is no easy task . . .” DEFRA News Release 174/03, 15 May 2003; via <http://www.defra.gov.uk/news/2003/indx2003.asp>

9. Part of our training and consultancy portfolio concerns the communication of research to lay audiences—policy makers, parliamentarians, professionals, and the public. Scientists are generally not very good at this and traditionally not interested in it. (The POSTnotes produced by the Parliamentary Office of Science and Technology are an important and deliberate attempt to redress this.) Our experience suggests that this is largely a consequence of inadequate skills training (not just in writing accessibly but in making presentations, running interactive workshop and seminars, and exploiting the potential of the Web) and of incentives that favour communicating research to fellow scientists more than to practitioners (notably the use of research publications as performance measures in the Research Assessment Exercise). Increasing emphasis is being placed on dissemination and “knowledge transfer” by the Research Councils, the Wellcome Trust, the Royal Society and others, but there is a long way to go.

EVALUATION AND FOLLOW UP

10. From our research and consultancy work on the relationship between evidence and policy, we consider that the need is not so much (as the Inquiry brief suggests) “to re-evaluate the evidence base after the implementation of policy.” Rather the need is to maintain, for all policy fields, a continuous updating of the evidence base as new scientific research—commissioned by government or by others—yields results that can inform policy development and delivery in a timely way. In our experience most policy needs for scientific evidence could be met—at a standard of reliability that is “fit for purpose”—from knowledge that already exists and is available. Managing those stocks of policy-relevant knowledge—keeping them objective and impartial, up-to-date, accessible—is the big scientific challenge for more evidence-informed policy.

May 2006

APPENDIX 23

Memorandum from the Department for Education and Skills

INTRODUCTION

1. This document responds to the Committee’s request for information on the processes adopted by DfES for using research and evidence in policy making. Two policy issues were selected for questioning by the Committee: the DfES announcement on 20 March 2006 concerning the future role of phonics in early reading; and the role of evidence in the development of Sure Start. In both cases, the Committee asked how far the processes involved were typical. The first part of this Memorandum therefore sets out the Department’s general framework for handling evidence.

The strategic context for handling evidence and analysis within DfES

2. The Department approaches the use of research and analysis in a strategic context. This reflects the strategic role for the Department as a whole set out in the 2004 Five Year Strategy for Children and Learners. It involves a number of complementary developments.

3. There is systematic identification of the major challenges facing education and children’s services, and the analytical implications which they pose. These include challenges set by Treasury as part of the framework for the 2007 Spending Review, such as globalisation, and overarching policy drivers, such as the high priority given to social mobility. Analytical efforts continue to address the Department’s concern with efficiency and effectiveness.

4. As a result, there is a range of strategic issues have been identified for analysis. Some relate to individual sectors (HE, Lifelong Learning, Children’s services), others are system-wide. The challenges and strategic issues are being brought together into a single framework to guide, prioritise and then monitor the Department’s programme of analysis and research. Examples of issues which are being addressed include the longer term impacts of early years provision, the most effective interventions to narrow social class gaps in attainment, and the drivers for youth engagement in positive or anti-social activities.

The prioritising and commissioning of evidence

5. Within the Department, much of the research, data, modelling and analysis is handled by an analytical community of social researchers, economists, statisticians and operational researchers. Policy officials are responsible for determining specific evaluation needs and for making use of evidence, and for commissioning periodic independent reviews that embrace both analytical and good practice evidence. The Department’s Strategy Unit is often involved in drawing together, interpreting and disseminating evidence.

6. The analytical work undertaken to support policy partly reflects the state of knowledge in any given field. Where the knowledge base is weak, the priority is to generate new insights to support policy intervention. This is where most externally contracted research is focused. Across all areas, but especially where the evidence base is richer, the goal is to marshal evidence from a range of sources to provide a clear and coherent picture.

7. Analytical work is conducted both internally, which offers flexibility to respond to issues as need arises, and externally. The external work involves a range of research studies, reviews and statistical or econometric analysis. These may be commissioned as self-standing projects or as part of programmes of work at external centres (eg the Centre for the Economics of Education; Centre for Research into the Wider Benefits of Learning).

8. Proposals for external projects are considered by a Research Approvals Committee (RAC), comprising senior analysts and policy officials, and chaired by the Department's Chief Scientific Adviser (who is also the Chief Economist). RAC recommendations go to the Secretary of State for consideration and approval for funding, which may be from the Department's central research budget (mainly for strategically-related research) or programme budgets (mainly for policy evaluation). Quality assurance processes for research studies are currently being reviewed. As part of this, the practicalities of formal peer reviews of research, and post-project assessment of policy impact, are being considered.

9. Independent policy and practice reviews are commissioned periodically to bring together diverse evidence and representations on a high-profile issue, and to make recommendations for Government action. Commissions for such reviews are typically developed at senior policy level, with an invitation coming directly from Ministers. In some cases, a commission is given to a partner organisation whose remit covers the issue, such as the 2005 HEFCE review of risks to strategically important subjects. In other situations, an individual or group of external figures are asked to undertake a review. DfES typically provides staff support and makes available existing evidence for the review.

10. The Rose Review was one of a number of such reviews over the last two years, others being Foster (FE sector roles and reform), Steer (behaviour in schools) and the current Gilbert Review (personalisation of teaching and learning). In each case, the issues required an exploration and drawing together of a wide range of evidence and opinions, from practitioner experience through stakeholder representation to inspection and academic evidence. Decisions to commission such reviews draw on existing analysis and evidence.

Evidence gathering and synthesis

11. The Department's analysis and research programme gathers different types of evidence, through a number of mechanisms. It includes:

- *longitudinal studies*: DfES fully funds the Longitudinal Study of Young People and Education and the Youth Cohort Study, and co-funds or supports the Millennium Cohort Study and others;
- *research centres*: seven are current funded, which develop programmes of research in related areas, rather than simply conduct single studies or analyses. Outputs may cover individual issue or topics (e.g. CEE on choice, EPPI on thinking skills) or wider syntheses (eg WBL on a conceptual framework for education's non-economic contribution).
- Contributions to *International studies* (PIRLS, TIMSS, PISA)
- Policy or issue-specific *evaluations*: some are medium-term programmes of work (Surestart, Aimhigher, Education Maintenance Allowances, Extended Schools), others are single studies or analyses (eg on Formalised Peer Mentoring Pilot, School Efficiency measures)
- *reviews of existing evidence*, some adopting systematic review principles, others for more urgent and formative purposes.

12. The Department's work is closely linked to the efforts of partners, and also to cross-Government developments. On some issues, other organisations lead on evidence gathering, with the Department drawing on their findings for policy (eg the Food Standards Agency for nutrition in schools, Becta (British Educational Communications and Technology Agency) on e-learning. There are also wider analytical developments, such as the Treasury-led Atkinson Review of Government Output and Productivity, where DfES analysts had a significant role.

The contribution of evidence to policy making

13. Evidence is incorporated into policy formulation and implementation in a number of ways. There is direct policy engagement with studies and analysis, whether as commissioners of work or through participation in steering or review groups. Emerging and final results feed into policy consideration on an ongoing basis. Depending on the point reached in policy cycles, the influence of evidence may be on policy development, on implementation or in support of front-line practice and leadership.

14. Different types of analytical work can make different contributions to policy. It is common for synthesis of existing research, or exploratory analysis, to set a context for policy or strategic thinking. The development of options for 14–19 policies, for example, was informed at various stages by analysis of the motivations and decisions of young people and the returns to different qualifications. Research and statistical evidence on the poor progress made by many pupils on moving to secondary school was an important prompt for the extension of the Primary National Strategy into Key Stage 3.

15. Large scale evaluations typically relate to the implementation of policies or options for delivery. The amounts and payment mechanisms for Education Maintenance Allowances, for example, were piloted and subject to both quantitative and qualitative evaluation. The eventual roll-out reflected the most favourable option from the research. Econometric analysis of the impact of Employer Training Pilots identified high deadweight, which was countered in the national programme (Train to Gain). Modelling and projections work supports funding decisions and the setting of targets and priorities for policy intervention. PSA targets on pupil absence, for example, were based on detailed analysis of trends for schools in different deprivations bands, as assessed by Free School Meals. And the modelling of alternative options for Higher Education student support was influential in shaping the final decision on repayment thresholds and rates.

THE PHONICS ISSUE AND THE ROSE REVIEW

16. Since the introduction of the National Literacy Strategy, now part of the Primary National Strategy (PNS), considerable improvements have been secured in the standards achieved in reading and writing. Nevertheless, since its inception, the Strategy has sought to draw upon new evidence and developments in order to further strengthen and refine its approaches. As part of the commitment to ensuring that the PNS continues to provide the most effective support for teaching reading (and literacy more widely), the Department announced in 2005 an intention to renew the cornerstone literacy document, the *Framework for teaching*.

Rationale for commissioning an independent review of early reading

17. There is wide consensus over the centrality of learning to read in children's education, but there has been a longstanding debate about how best to teach early reading. Since 1998, the National Curriculum has required all primary schools to teach phonics. It did not specify how phonics should be taught but guidance was provided in the *Framework for teaching*.

18. The Department was clear that the renewal of the Framework, plus plans to introduce the new Early Years Foundation Stage¹¹⁵ (EYFS), needed to be informed by a comprehensive examination of the available evidence. This would include formal research findings but also wider evidence from discussions with key stakeholders, first-hand observation of practice and the representations and submissions of organisations engaged in the literacy field. Any set of recommendations for new pedagogical approaches needed to carry credibility across many different interest groups and stakeholders.

19. Policy officials and advisers defined the Department's requirement as credible and practice-grounded recommendations which could be implemented in a revised Framework and in the new EYFS. An independent review, of the type outlined in paragraphs 9 and 10 above, was judged to be the best mechanism to address the wide-ranging issues of practice, development and training. The over-riding consideration was that the long-standing debate around phonics had led to a divergent set of opinions. For example, the Chair of the Education and Skills Committee, referring to that Committee's report on teaching reading, noted that "... When we took evidence on this particular topic ... passions ran very high. Against this background, the Department concluded that securing a consensus would most likely be achieved by an independent expert making recommendations from a combined analysis of research and practice. Jim Rose was invited to lead the review as he fulfilled the criteria of being independent, credible and well-informed. The remit for the review is attached at Annex A.

20. In conclusion, the Department considered that an independent review would yield the greatest benefits in terms of:

- (i) building a comprehensive picture to inform work to strengthen the quality of support for teaching early reading;
- (ii) ensuring a robust process founded on evidence from research, practice and stakeholder opinion; and
- (iii) establishing broad consensus about recommendations which would allow for successful implementation via the Framework and revised teaching training and development processes.

¹¹⁵ This aims to create a single, coherent framework for children's care, learning and development from birth until the end of August following a child's fifth birthday.

Responses to the Committee's questions

Q. In view of the uncertain conclusions on synthetic phonics reached by the DfES-commissioned research referred to in the Rose final report (p 19), what weight was given to:

- (i) analysis of existing relevant research,
- (ii) experience and pilots in the UK and
- (iii) other factors in reaching a decision on the new policy?

21. From the late 1990s, the Department had been aware that prior formal research did not point overwhelmingly to a particular conclusion about synthetic phonics (see Annex B for definitions of approaches to phonics). Accordingly, the Rose review was established to integrate a wide set of evidence, which included all the categories in the Committee's question. The purpose was to identify best practice in the teaching of reading, including the role played by synthetic phonics. The following sources were employed in addressing the five fold remit set out by the Secretary of State.

- Published research on literacy in general and the teaching of reading in particular. This included the systematic review of trials using phonics, which was commissioned by the Department in 2005 (see paragraph 23);
- The report by the Education and Skills Committee on teaching reading;
- Reports and data from Ofsted, the Qualifications and Curriculum Authority, and the DfES;
- Evidence from classroom practice: notably, a bespoke HMI exercise to monitor the use of phonics in a variety of schools;
- Additional visits to settings, and schools, including some engaged in the Primary National Strategy's Early Reading Development Pilot;
- Attendance of practitioner and teacher training sessions;
- Discussions with practitioners, teachers and those responsible for training them; and
- Oral and written representations from individuals and organisations in the fields of literacy and early reading.

22. A full list of the types of evidence considered, which appears in the published report, is at Annex C. In addition, Jim Rose drew upon a review advisory team, comprised of researchers and an HMI, which brought expertise in different aspects of the review's remit. One of the advisory researchers was Greg Brooks, who also co-authored the DfES-commissioned systematic review.

23. The DfES research referred to by the Committee was one of a number of studies or reviews considered by Jim Rose. It was a systematic review of published quantitative studies on the teaching of phonics, conducted by Carole Torgerson, Greg Brooks and Jill Hall. A systematic review gathers published evidence according to clear criteria. In this case, the studies included were confined to randomised control trials (RCTs) focusing on the use of phonics instruction in English. The studies had to compare a systematic approach to phonics delivery with either unsystematic or non-phonics teaching, or else directly compare synthetic and analytical phonics teaching. In all cases, studies needed to report or allow calculation of statistical effect sizes to order to be used for the synthesis of results. A total of 12 RCTs met the full criteria for comparing systematic phonics with alternative reading approaches, although only one was a British study. The primarily North American context is an issue to consider in assessing the contribution of the RCT evidence.

24. Torgerson *et al* concluded that the use of phonics in a systematic fashion within a broad literacy curriculum, as a means of improving reading accuracy, was supported by the RCT evidence included in their review. This matches Jim Rose's view, which he drew from much wider evidence, about the value of teaching phonics in a systematic fashion. However, evidence from RCTs was less able to answer other questions addressed in the systematic review. For example, few of the included trials covered reading comprehension; as a result, the effect on comprehension of a systematic approach to phonics was not statistically significant. Similarly, there was insufficient trial evidence on the issue of spelling, and on direct comparison between the synthetic and analytic phonics approaches, to draw statistically valid conclusions on these questions. The authors also advised caution in using their RCT evidence because of the variation in the amount of phonics teaching involved in different trials, from just a few hours to well over 100 hours.

25. As described above, Jim Rose drew on a much wider range of evidence than the mainly North American randomised control trials in Torgerson *et al*. The conclusions from UK practice, as reported by the specific HMI visits undertaken for the review and from his own discussions and observations, not only supported the case for using phonics but suggested that synthetic phonics was the best route for young children learning to read. In giving evidence to the Education and Skills Committee in January, Jim Rose confirmed that the evidence he saw from practice was compelling.¹¹⁶ His report states that the principles of a systematic approach using synthetic phonics "featured consistently in the best work seen including the visits undertaken by HMI for the review". However, he also confirmed that phonics by itself is not sufficient to

¹¹⁶ House of Commons Education and Skills Committee, Teaching Children to Read: session, 30 January 2006.

fully equip children with all the skills they need to become effective readers. In this respect, his findings are not inconsistent with the Torgerson *et al* position that too few controlled studies have been undertaken in relation to comprehension and spelling to demonstrate a positive effect of phonics in these areas.

Q. *What other evidence and research, in addition to the reports by Jim Rose, were used to inform the decision; and was his work subject to peer review?*

26. The Rose review was not the starting point for evidence on the teaching of early reading. The National Literacy Strategy was founded on earlier research conclusions about reading, and its continued evolution has taken account of evaluated best practice. As a result, the Strategy always emphasised the importance of systematic approaches and the key role of phonics. The review was, therefore, conducted against the background of evidence-based principles that were already inherent within the Strategy.

27. The review was designed to be a thorough and coherent analysis of all types of evidence, including that commissioned or provided by the Department (including the Torgerson *et al* review). Jim Rose kept the Department informed of his emerging assessments, enabling Ministers and officials to weigh them against information already available to the Department. He considered the Department's responses fully in preparing his drafts, although he retained full responsibility for producing an independent report. This process enabled the Department to be confident that the published reports reflected the evidence obtained. Ministers were therefore able to accept the recommendations fully.

28. There are two issues to consider in relation to peer review, which, in the scientific sense, seeks to test the robustness of the analytical design and methods brought to bear on the research question. First, the Rose review was not a research study *per se*, but aimed to assess existing evidence and practice. A peer review of the classic type would be less relevant in this situation. Many of the studies examined had been peer reviewed themselves, of course, prior to publication.

29. Second, the independent and wide consultation undertaken by Jim Rose, including with many researchers, did allow expert judgements to be fed into the process. His interim report invited comments on the issues raised and the evidence included. Over 300 written responses were received during the course of the Review. The input from Rose's expert advisory team, whose members had a predominantly research background, provided a further mechanism to ensure robustness in the Review's conclusions. These channels gave full opportunity for the research community to test the review's emerging conclusions, which were reaffirmed in the final report.

Q. *What steps are in place to evaluate the implementation and results of the policy?*

30. The Department will monitor closely the implementation of the recommendations from the review through a number of mechanisms, many of which are already established. The Primary National Strategy regional advisers will continue their programme of monitoring implementation of the Strategy at local level. Throughout 2006–07, the focus will be on the progress made by early years settings, schools and local authorities in adopting and implementing the renewed literacy framework and associated support which will be introduced from Autumn 2006. Over time, this will extend to include the implementation of support offered by the new Early Years Foundation Stage when this is introduced from 2008.

31. External agencies have also been invited to monitor and evaluate the implementation. Ofsted's 2006–07 evaluation of the Primary National Strategy will focus on the implementation and impact of the Strategy's renewed support in schools and local authorities. Ofsted has also been invited to review the quality of training in the teaching of reading that providers of Initial Teacher Training (ITT) offer over the next two years. The Strategy will additionally draw upon external expert advice to inform its development of professional development materials and programmes for teaching early reading.

32. Finally, Jim Rose has been asked by the Secretary of State to assess, and provide advice in early 2007, on the progress made in implementing his recommendations for teaching and practice, based on the first stage of implementation in Autumn 2006.

33. The effectiveness of making synthetic phonics the prime strategy in teaching children to read will be assessed through analysis of national and local attainment and progress data. National results for the Foundation Stage, and Key Stages 1 and 2 already yield a rich source of evidence about standards achieved in reading, writing and English. We will consider how best to interrogate the national data to make an effective assessment of the impact of our revised approaches. The approach will take account of the national nature of the implementation, which does not allow for classic control trials or studies. The emerging findings from analysis of effectiveness will also guide future development of support for early reading.

CONCLUSION

34. The independent review of early reading was undertaken to provide a comprehensive picture of best practice in the teaching of early reading. It was seen as the soundest basis on which to make recommendations for further strengthening the quality of the support already offered to settings and schools. In accepting the review's recommendations, the Department was satisfied that these criteria have been fulfilled. The focus now is on ensuring that the enhanced support is developed, introduced and implemented in line with the review's recommendations, and on monitoring the effects of the initiative.

THE SURE START PROGRAMME

Introduction

35. The development of the Sure Start programme and its successor policy, Children's Centres, has been heavily and consistently informed by research evidence. The Sure Start programme was built on evidence from a wide range of both UK and international studies. The National Evaluation of Sure Start (NESS), the Department's Effective Provision of Pre-School Education study (EPPE) and other UK and international studies continue to be instrumental in the development of early years policy.

The genesis of the Sure Start Programme

36. The Sure Start Programme emerged from a cross cutting review of services for young children undertaken by a cross-Departmental group, led by HM Treasury, as part of the Government's 1997 Comprehensive Spending Review (CSR). A key part of this review was an independent assessment of the research evidence on what worked in improving outcomes for young children, particularly those in greatest need. Conducted by Marjorie Smith of the Thomas Coram Institute at the Institute of Education, this assessment highlighted evidence from a range of studies demonstrating a clear relationship between poverty and poor child outcomes. It also illustrated the importance of early childhood experiences—both positive and negative—in influencing later outcomes. The Smith assessment concluded that early childhood intervention programmes could have a significant impact on a wide range of child and family outcomes. This underpinned the CSR review's conclusion that:

“the provision of a comprehensive community based programme of early intervention and family support which built on existing services could have positive and persistent effects, not only on child and family development but also help the cycle of social exclusion and lead to significant long term gain to the Exchequer.”

37. The Government's consideration of services for young children recognised that the UK evidence on the effectiveness of early intervention was quite limited, with much of the evidence for proposed policies coming from the US. It was recommended that the new programme, which became Sure Start, should be accompanied by a rigorous and comprehensive evaluation.

38. These recommendations culminated in the announcement of Government funding of £452 million to set up 250 Sure Start local programmes (SSLPs) in areas of deprivation by 2001–02. These programmes aimed to improve services both for young children and families, in order to improve outcomes for children. The national programme had a dedicated suite of PSA targets that were chosen based on their relationship to future child outcomes. These included smoking in pregnancy, hospital admissions, and speech and language development. These targets ensured that all local programmes worked to common aims.

39. Within these common aims, individual Sure Start programmes had relative freedom to develop a package of services that met the needs of their particular community. But they were tasked to select and adopt services and approaches that were evidence based. A range of approaches had already been subject to evaluation and identified in the literature as having positive effects on children and parents, eg parenting interventions such as Webster-Stratton or PEEP (Peers Early Education Partnership) amongst others. The Department published a Guidance document in 1999 (*A Guide to Evidence Based Practice*) that drew together much of this evidence, enabling local programmes to identify and implement appropriate evidence-based services.

National evaluation of Sure Start

40. The Department's commitment to a robust evaluation was clear from the outset. A clear aim of the evaluation strategy was to inform the ongoing development and roll out of the programme, as well as identify its impact once established.

41. After a competitive tender, a scoping exercise was undertaken by the Institute of Education to assess the type, level and nature of an evaluation needed for this diverse initiative. The report was used to inform the specification of requirements for the national level evaluation.

42. The National Evaluation of Sure Start (NESS) was commissioned in January 2001 after a competitively tendered, open competition. A consortium of academics and consultants, led by Birkbeck College, University of London, won the contract. The first survey of Trailblazer and second round programmes took place later that year.

43. NESS is overseen by an integrated governance structure which allows for independent scrutiny of both methodology and findings. An independent expert panel provides this function to both the Department and to the researchers. An additional steering group allows other government departments, researchers and practitioners an opportunity to feed into the development of the evaluation (particularly in sharing messages from their own evaluations and research) as well as ensuring reports are policy relevant and therefore will be useful in policy development in other Government departments.

Response to the Committee's questions

Q. What pilot projects were undertaken in conjunction with the Sure Start programme and how were the results of these pilots assessed?

44. The initial phase of Sure Start was implemented rapidly and involved a significant number of local programmes. The initial programme design drew heavily on the evidence gathered during the Treasury-led review. The staged roll-out of the local programmes¹¹⁷ afforded an opportunity to use the first set of 59 SSLPs—the “Trailblazers”—as a pilot for evaluation purposes. These initial programmes provided an opportunity to gather early lessons, and help and support future programmes. Informal feedback was brought together within the Department, through local programme staff themselves, partner agencies and regionally based DfES staff. Staff at Government Offices facilitated the sharing of experience and networking via seminars and meetings, which allowed practitioners to share both positive and negative lessons.

45. The Department drew together the information from these different sources and modified its implementation accordingly. It placed greater emphasis on working with pregnant women, for example, not just those already with babies or young children. These policy modifications, as well as examples of good practice, were distilled into guidance which was quickly disseminated to the next tranche or “Round” of programmes. Guidance documents were issued for each new Round, utilising evidence and learning generated by the previous SSLPs.

46. Early learning and feedback from programmes on the ground shaped Sure Start policy more fundamentally. It became clear, for example, that the Sure Start “model” did not fit with rural communities, since the geographic proximity to services which was a key feature of the design was more problematic in rural areas. The Department became more flexible in the application of the model and also set up a parallel programme specifically to incorporate rural areas as well as small pockets of deprivation, based on this evidence.

47. More formal evaluation of the early rounds came via the national evaluation (NESS), which was designed to cover a series of rounds of implementation. Early lessons from the implementation of Trailblazer and Round 2 programmes were available by early 2002 and fed into further guidance for programmes. As well as providing an overview of early progress, the evaluation identified a number of challenges and barriers to delivery of Sure Start. These included: the need to engage and consult better with families, especially fathers and those from minority ethnic groups; to improve access to services; to build multi-professional teams; and to improve local partnership working. In response, the Department provided additional support in the form of advisers based at Government Offices, as well as targeting its guidance documents on identified issues (eg “Guidance on involving minority ethnic children and families”).

48. During 2002 the Department assessed the range of evidence which had become available on the pilot programmes. Whilst it was too early to identify formal impacts, the picture that emerged from local evidence and from the early evaluation of Trailblazers was that clearly parents liked (and were using) Sure Start services, and that staff felt they were already making a difference in families’ lives. This evidence fed into Spending Review processes, including a Prime Ministers’ Strategy Unit review of childcare which recommended the bringing together of DfES work on early education, childcare and SSLPs, and a transfer of joint responsibility from DoH/DfES to DWP/DfES.

Q. What were the key lessons from the pilots and how have they been used in the development of the Sure Start programme?

49. The process of drawing lessons from the early rounds of local partnerships has been described above, with some examples already cited of modifications to policy implementation. The reports from the national evaluation identified a number of issues which the Department needed to consider. Three further examples are:

- it was shown that some of the most disadvantaged families in Sure Start areas were not demonstrating benefits from the programme. This evaluation suggested that groups such as teenage parents or families with children with special needs either did use Sure Start services or that the services provided did not meet their needs and improve outcomes. In response, Departmental guidance on Sure Start Children’s Centres Practice Guidance in November 2005 required that all centres worked closely with low participating groups, through outreach, peer support and other mechanisms. The guidance advised working closely with partner organisations to share expertise, information and data in order to engage such families;
- the Sure Start evaluation also found that children living in those local partnerships that were actively engaged with their local health agencies had better outcomes than in other SSLPs. The guidance therefore emphasised closer working relationships with health partners. At a policy level, further emphasis was placed on work with the Department of Health to ensure children’s centres remained at the heart of health service delivery to young families;

¹¹⁷ 59 Round 1 “Trailblazer” programmes (announced November 1998); Round 2—69 programmes (November 1999); Round 3—64 programmes (July 2000); Round 4—66 programmes (January 2001).

- SSLPs had been set a key goal of helping parents into work or training, which reflected prior evidence that work is a prime route out of poverty. The Sure Start evaluation, however, found that this objective was proving difficult for SSLPs, since some of the activities involved (job search support, directly provided training) fell beyond the traditional remit of early years practitioners. DfES and DWP therefore arranged for closer links between SSLPs and Jobcentre Plus, to ensure that Sure Start parents had easier access both to the full range of advice and support they needed and also to the training providers in their area. Latest figures show fewer children aged 0 to three living in homes completely dependent on benefits in SSLP areas than there were four years ago (down 3.8% to 40.4%). This was a significantly greater drop than in England as a whole (where the figure fell by 1.2% to 22% over the same period).

50. Evidence from the national evaluation and other studies has contributed to the design and development of Sure Start, both in the original rollout of local partnerships and in developing Sure Start children's centres, the "successor" policy to SSLPs. Examples of this broader impact of evidence are:

- birth cohort studies (supported by the Department) have consistently demonstrated the link between early childhood experience and later outcomes. And the DfES-funded Effective Provision of Pre-School Education (EPPE) longitudinal study has demonstrated that children from disadvantaged backgrounds, in particular, benefit from high quality pre-school. Therefore, a key element of the Government's 10 year Strategy for Childcare (HMT, 2004) and Sure Start children's centres has been to provide high quality integrated education and childcare services in disadvantaged areas. And, based on EPPE evidence that the presence of a qualified teacher was crucial for high quality early years provision, the Department has required that all children's centres have a minimum level of teacher time on site.
- EPPE also found that early years settings that integrated their early education and childcare were among the most successful in improving outcomes for children. This led the Department to develop this type of provision more widely. "One-stop shop" centres that provide both early education, childcare, family support and a range of health and other advice are now at the heart of early years policy. NESS evidence confirms that parents and staff alike prefer the "one stop shop" approach. These and other findings contributed to Practice guidance in November 2005.

Q. What other evaluations of the Sure Start programme or research have been undertaken and what role have they played in informing the evolution of the programme?

51. From the outset, SSLPs were each required to undertake their own evaluation of their programme. This was intended to encourage reflective practice, test new and innovative approaches and practice robustly, grow the evidence base about what works for children and families, and inform the further development and progress of the programme. SSLPs were encouraged and supported by academics from the NESS team who facilitated workshops, training events, shared information and synthesised findings.

52. Local evaluation reports have been extremely useful in disseminating evidence about what works for families and children. This has complemented the more overarching reports of the national evaluation team. Examples of good practice were heavily used in the Children's Centres practice guidance and new evidence will be incorporated into the next set of guidance due for release later in 2006. Mechanisms were established to share evidence and experience between practitioners, policy makers and researchers. This has since extended beyond SSLPs to the wider early years sector, as well as those involved with community development and local regeneration.

Q. What has been the total Government expenditure to date on:

- (i) *the pilot projects,*
- (ii) *evaluation and commissioned research to inform the programme and*
- (iii) *the Sure Start programme as a whole?*

53. The cost of the overall Sure Start programme to date (1999–2000–2004–05) has been £1.3 billion. Within this, the approximate allocations of capital and revenue from the Department to the 59 Trailblazer local programmes over their first three years of operation was £148 million. The National Evaluation of Sure Start is costing £20.3 million over the seven year period 2001–08. This is not solely for the independent national evaluation but includes costs of support provided by the consortium to Sure Start local partnerships for their local evaluation work.

Annex A**REMIT FOR THE ROSE REVIEW****ASPECT 1**

What best practice should be expected in the teaching of early reading and synthetic phonics.

ASPECT 2

How this relates to the Early Years Foundation Stage and the development and renewal of the National Literacy Strategy's Framework for teaching.

ASPECT 3

What range of provision best supports children with significant literacy difficulties and enables them to catch up with their peers, and the relationship of such targeted intervention programmes with synthetic phonics teaching.

ASPECT 4

How leadership and management in schools can support the teaching of reading, as well as practitioners' subject knowledge and skills.

ASPECT 5

The value for money or cost effectiveness of the range of approaches covered by the review.

Annex B**GLOSSARY**

Synthetic phonics: the defining characteristics are sounding out and blending phonemes (the smallest units of sound that make a difference to the meaning of a word) in order, all through a word to read it; and segmenting words into their phonemes in order to spell them.

Analytic phonics: the defining characteristics are inferring letter-sound relationships from sets of words which share a letter and a sound, eg pet, park, push, pen.

Systematic phonics: teaching letter-sound relationships in an explicit, sequenced fashion, as opposed to incidentally or on a "when-needed" basis.

Randomised control trials: where two or more groups of children are formed randomly and each group receives a different form of instruction. If one groups makes significantly better progress it can be inferred that the form of teaching they received was more effective, because all other factors which might influence the outcome are controlled for (with the exception of chance).

Annex C**EVIDENCE CONSIDERED BY THE REVIEW**

The review took evidence from a range of sources, the main ones being:

- oral evidence, from individuals and associations;
- visits;
- written evidence.

ORAL EVIDENCE—INDIVIDUALS

Professor Lesley Abbot, Institute of Education, Manchester Metropolitan University.

Professor Robin Alexander, University of Cambridge.

Bev Atkinson, Medway LA.

Sir Michael Barber.

Ian Barren, Institute of Education, Manchester Metropolitan University.

Alix Beleschenko, Qualifications and Curriculum Authority (QCA).

Professor Greg Brooks, University of Sheffield.

Tom Burkard, Promethean Trust.
Professor Brian Byrne, University of New England.
Mary Charlton, Tracks Literacy.
Professor Margaret Clark, University of Birmingham.
Ian Coates, former Head of SEN and disability division, DfES.
Kevan Collins, former Director, Primary National Strategy.
Felicity Craig.
Shirley Cramer, Chief Executive, Dyslexia Institute.
Kate Daly, adviser, Minority Ethnic Achievement Unit, DfES.
Edward Davey MP.
Alan Davies, THRASS.
Professor Henrietta Dombey, University of Brighton.
Marion Dowling.
Nick Gibb MP.
Professor Usha Goswami, University of Cambridge.
Marlynne Grant, Educational psychologist, South Gloucestershire LA.
Jean Gross, Every Child A Reader.
Kate Gooding, Early Childhood Forum (ECF).
Sue Hackman, chief adviser to ministers on school standards, DfES.
Professor Kathy Hall, Open University.
Diana Hatchett, Primary National Strategy.
Debbie Hepplewhite, Reading Reform Foundation.
Sue Horner, QCA.
Jane Hurry, University of London, Institute of Education.
Laura Huxford.
Julie Jennings, ECF.
Professor Rhona Johnston, University of Hull.
Lesley Kelly, Cambridgeshire LA.
Penny Kenway, Islington LA.
Julie Lawes, Catch Up.
Sue Lloyd and Chris Jolly, Jolly Phonics.
Ruth Miskin, ReadWriteInc.
Sue Nally, Warwickshire LA.
Angie Nicholas, Dyslexia Institute.
Joan Norris, ECF.
Wendy Pemberton, Primary National Strategy.
Sue Pidgeon, Primary National Strategy.
Dee Reid, Catch Up.
Eva Retkin.
Dilwen Roberts, Merton LA.
Rosie Roberts.
Cheryl Robinson, Bedfordshire LA.
Lindsey Rousseau, South East Region Special Educational Needs Partnership.
Conor Ryan.
Professor Pam Sammons, University of Nottingham.
Peter Saugman and Bruce Robinson, Mindweavers.
Professor Margaret Snowling, University of York.
Professor Jonathan Solity, University of Warwick.
Lesley Staggs, Primary National Strategy.

Professor Rhona Stainthorp, University of London, Institute of Education.
 John Stannard.
 Arthur Staples, LexiaUK.
 Professor Morag Stuart, University of London, Institute of Education.
 Professor Kathy Sylva, University of Oxford.
 Ralph Tabberer, Training and Development Agency for Schools (TDA).
 Jude Thompson, Headteacher, Dorton House School.
 Janet Townend, Dyslexia Institute.
 Gail Trembl, SEN professional adviser, DfES.
 Paul Wagstaff, Primary National Strategy.
 Trudy Wainwright, St Michael's Primary School, South Gloucestershire LA.
 Tina Wakefield, British Association of Teachers of the Deaf.
 Mick Waters, QCA.
 Joyce Watson, University of St. Andrew's.
 Lyn and Mark Wendon, Letterland.
 Caroline Webber, Medway LA.
 Rose Woods, Helen Arkell Dyslexia Centre.

ORAL EVIDENCE—ASSOCIATIONS

Association of Teachers and Lecturers (ATL).
 Basic Skills Agency.
 British Association for Early Childhood Education.
 Dyslexia Institute.
 Early Education Advisory Group.
 Educational Publishers Council.
 GMB.
 I CAN.
 National Association for Language Development in the Curriculum (NALDIC).
 National Association for the Teaching of English (NATE).
 National Association of Education Inspectors, Advisers and Consultants.
 National Association of Head Teachers (NAHT).
 National Association of Primary Education (NAPE).
 National Governors' Association.
 National Association of Schoolmasters Union of Women Teachers (NASUWT).
 National Childminding Association (NCMA).
 National Children's Bureau.
 National Confederation of Parent Teacher Associations (NCPT).
 National Family and Parenting Institute (NFPI).
 National Literacy Trust.
 National Union of Teachers (NUT).
 Parent Education and Support Forum (PESF).
 Peers Early Education Partnership (PEEP).
 Pre-School Learning Alliance (PLA).
 Primary Umbrella Group.
 Reading Recovery National Network.
 Renaissance Learning.
 UNISON.

United Kingdom Literacy Association (UKLA).
Volunteer Reading Help.
Xtraordinary People.

ORAL EVIDENCE—EDUCATION AND SKILLS COMMITTEE

In addition, oral representations were taken from members of the Education and Skills Committee on 30 January, 2006.

Visits

In Scotland, members of the review took evidence from the Scottish Executive Education Department, members of Clackmannanshire council, headteachers and teachers of Clackmannanshire primary schools.

In England, in addition to the oral evidence listed, evidence was drawn from visits to schools and training events, as well as discussions with practitioners during those events. Of the schools visited by HMI, 17 of them included nursery-aged pupils (aged 3–4).

Schools visited by Her Majesty's Inspectors (HMI).

Andrews' Endowed Church of England Primary, Hampshire LA.

Barlows Primary, Liverpool, Liverpool LA.

Blue Coat C of E Aided Infants, Walsall, Walsall LA.

Bonner Primary, London, Tower Hamlets LA.

Brooklands Primary, London, Greenwich LA.

Byron Primary, Bradford, Bradford LA.

Christ the King RC Primary, London, Islington LA.

Cobholm First School, Great Yarmouth, Norfolk LA.

Coppice Infant and Nursery School, Oldham, Oldham LA.

Elmhurst Primary, London, Newham LA.

Heaton Primary, Bradford, Bradford LA.

Holy Family Catholic Primary, Coventry, Coventry LA.

Kings Hedges Primary, Cambridge, Cambridgeshire LA.

Lostwithiel Primary, Lostwithiel, Cornwall LA.

St Michael's C of E Primary, Bristol, South Gloucestershire LA.

St Sebastian's Catholic Primary School and Nursery, Liverpool, Liverpool LA.

Stoughton Infants, Guildford, Surrey LA.

Swaythling Primary, Southampton, Southampton LA.

Thelwall Community Infant School, Warrington, Warrington LA.

Tyldesley Primary, Manchester, Wigan LA.

Victoria Infants, Workington, Cumbria LA.

Victoria Road Primary, Plymouth, Plymouth LA.

William Lilley Infant and Nursery, Nottingham, Nottinghamshire LA.

Woodberry Down Primary, London, Hackney LA.

Other schools visited by members of the review team

Greatwood Community Primary, Skipton, North Yorkshire LA.

Ings Community Primary and Nursery, Skipton, North Yorkshire LA.

Lyndhurst Primary, London, Southwark LA.

Millfield Preparatory School, Glastonbury.

Oliver Goldsmith Primary, London, Brent LA.

Snowsfields Primary School incorporating the Tim Jewell Unit for Children with Autism, London, Southwark LA.

Walnut Tree Walk School, London, Lambeth LA.

Training observed and conferences attended

“ReadWriteInc”—training: 5 and 6 September 2005.

Amy Johnson Primary School, Sutton LA.

“ReadWriteInc”—training: 16 September 2005.

Vermont School, Southampton, Hampshire LA.

“The Death of Dyslexia?”—conference: 21 October 2005.

The Friends House, London.

“Playing with sounds”—training: 8 November 2005.

Cambridge Professional Development Centre, Cambridgeshire LA.

Early Reading Development Pilot—feedback conference for pilot LAs: 15 December 2005 Marlborough Hotel, London.

Reading Recovery—training: 24 January 2006.

Woodlane High School, London, Hammersmith and Fulham LA.

Written evidence

Evidence was also drawn from sources of published information, notably:

- the House of Commons Education and Skills Committee, particularly the report *Teaching children to read*;
- reports and data from Ofsted, in particular from evaluations of the National Literacy Strategy, the Primary National Strategy, the teaching of English and initial teacher training;
- reports and papers from the other bodies, including the Qualifications and Curriculum Authority, the Teacher Development and Training Agency for Schools and the Basic Skills Agency;
- reports and papers from researchers from academic establishments, professional associations, and professionals working in the field of early reading and other aspects of literacy from both the United Kingdom and internationally;
- materials and guidance for practitioners and teachers on supporting literacy and reading development for 0–3, the Foundation Stage, and Key Stages 1 and 2 produced by the DfES and the Primary National Strategy;
- teaching materials and guidance produced by providers of commercial and voluntary reading schemes;
- analysis by the DfES of national test results for reading and writing at Key Stage 1 and for English at Key Stage 2.

Further evidence was drawn from over 300 letters and submissions to the review, including some from those who also provided oral evidence.

APPENDIX 24

Supplementary evidence from the Food Standards Agency

ADDITIONAL QUESTIONS

1. *What is the Agency's primary objective in undertaking public consultation and engagement in relation to its advice and policies?*

The Agency's key objectives in undertaking public engagement and consultation are:

- to underpin our modern, inclusive and socially-robust approach to policy development, where our open and transparent approach has moved us away from the sequential model of “assess, decide, tell” towards a more integrated model that has engagement with the public and with other stakeholders at its core; and
- to understand the different appetites for risk of different citizens and groups of citizens, in order that we might communicate what a complex technical risk means in terms of practical action and, where there are meaningful choices to be made, give people information on which they can make their own judgements about handling of risk.

2. *What evaluation has the Agency undertaken of the impact of holding Board meetings in public? What steps have been taken to ensure that this does not inhibit frank discussion?*

Being open and accessible is one of the Agency's core values. From its inception, Board meetings where the Agency's strategy and policies are discussed and agreed have been held in public. Baroness Dean carried out a review of the Agency at the end of 2004 to assess the Agency's effectiveness in delivering its objectives and core values (<http://www.food.gov.uk/multimedia/pdfs/deanreviewfinalreport.pdf>). She found that the Open Board Meetings were seen by stakeholders as a demonstration of the Agency's openness. She recommended that the Agency must continue its debate on the subject of open board meetings to seek a mechanism which allows for in-depth and/or technical discussions to add value to open board meetings without undermining the principle of openness.

In response, the Agency has begun to review the division of business brought to open and closed Board meetings and in June 2006, the Board will be considering whether or not it would wish in future to allow public attendance at some of the expert briefings currently given only to closed Board meetings. A more wide ranging review by the Board of how the Agency is fulfilling its core value of being open and accessible is planned for later in 2006. The effectiveness of open meetings, as they are currently configured, will be addressed at that time.

3. *How, if at all, does the Agency co-ordinate its activities with those of the research councils?*

The Agency collaborates with other organisations where we share a common interest in the potential outcomes, including through joint funding. The Research Councils are key partners in this work. Some examples of this co-ordination are outlined below:

- The Agency leads or participates in several joint-funders and other groups that co-ordinate publicly funded research in key areas, including microbiological safety of food, TSEs, nutrition and nanotechnologies. Relevant Research Councils—such as the MRC, BBSRC, NERC, ESRC and EPSRC—are key partners in these groups.
- We have agreed with the BBSRC that we can participate in its Government Partnership Award scheme. It facilitates co-funding by the Agency of BBSRC research grants that are of interest to us. An Agency representative attends meetings of the BBSRC Agri-Food Committee, which is the BBSRC grant-awarding committee most relevant to the Agency.
- We are exploring the possibility of establishing similar arrangements with other Research Councils, including the MRC, in areas of potential interest to the Agency.
- The Agency is participating in the National Prevention Research Initiative (NPRI), aimed at primary prevention of cancer, coronary heart disease and diabetes. NPRI will fund research to provide robust evidence on effective ways to reduce risk and influence health behaviours, including diet, physical activity and other lifestyle factors. It is sponsored by a broad consortium of funders including MRC and ESRC.
- We developed a Joint Code of Practice on Quality Assurance in Research with Defra, the BBSRC, and the NERC. Launched in 2003, the Code seeks to improve QA of the research process, and has since been endorsed by the Northern Ireland Department of Agriculture and Rural Development, the Scottish Executive Environment and Rural Affairs Department and the Welsh Assembly Government Agriculture and Rural Affairs Department.
- We co-ordinate our input to EU research programmes with BBSRC and other research councils (MRC, NERC) as well as other departments and funders. We provide a co-ordinated team of National Contact Points to provide advice and support to UK participants in the Food area in EU Framework Programmes, with the BBSRC and Defra.
- There are also innumerable operational-level contacts between Agency staff and their opposite numbers in the Research Councils (most commonly BBSRC, MRC, NERC and ESRC). For example, the Agency recently held a seminar with the ESRC to discuss the results of ESRC projects of potential interest to the Agency.
- Representatives of Research Councils often take part in reviews and workshops of Agency research programmes and appraisal of proposals to the Agency for research.

4. a *Examples of occasions when the Agency has proactively reviewed and commented on Government policy (ie without being asked to do so by the Government) (Q621).*

It is important to state at the beginning of this response that in most areas of the Agency's business we lead rather than respond to the development of policies. Therefore we are usually in the driving seat when it comes to applying our core values of:

- Putting the consumer first;
- Being open and accessible; and
- Being an independent voice.

However, there are some areas of our business where we do not have regulatory responsibility and seek to influence through constructive partnership and being an independent voice. We hope the following examples of a challenge function will be helpful to the committee. The first example was outlined by Dame Deirdre when she spoke to the Committee Chairman after the meeting.

Pesticides and Veterinary Medicine Residues in Food The FSA plays a powerful watchdog role in these areas of work where the regulatory responsibilities lie with Defra and its Agencies. We strive to ensure that our core values are applied to this work and that food safety is given top priority during the authorisation and monitoring processes. On those occasions, when we believe that Defra and its Agencies have not put consumers first, we have publicly challenged their action, eg:

- (i) When Agriculture Ministers consulted on a proposal to delay the phasing out of certain pesticides to meet new EU regulations, the FSA objected and called for an immediate phase out. Following the consultation, Agriculture Ministers went ahead with the proposal and the FSA issued a press release (<http://www.food.gov.uk/news/pressreleases/2000/dec/ministerialaction>) setting out our position, calling for speedy action from Agriculture Ministers; and summarising a letter from Sir Jon Krebs (then Chair of the FSA) to Agriculture Ministers.
- (ii) The FSA has always called for the Veterinary Medicines Directorate to provide consumers with brand name information for its survey results in order that consumers are better able to make informed choices. Lack of progress in key areas resulted in a public call for action from the FSA at the Board's open meeting in June 2002 (see paragraphs 9, 11 and 16 of the Board paper FSA 02/06/04; <http://www.food.gov.uk/multimedia/pdfs/paperfsa020604.pdf>).
- (iii) The FSA called for the scope of Defra's national Pesticide Strategy to be broadened to address residues in food. This was made clear in the FSA's response to the consultation on the draft plan (See Annex 1).

Dioxin emissions from pyres

At the time of the foot and mouth disease (FMD) outbreak in 2001, Department of Health undertook a rapid qualitative assessment of possible risks to public health from FMD disposal options. This assessment concluded that the exposure to dioxins via the diet from FMD pyres would be minor compared to background exposure via the rest of the diet. The FSA however was concerned that the DH assessment of risks to health did not take account of all the uncertainties in the underpinning models. We therefore investigated further the degree of uncertainty and began to monitor dioxins in foods produced near to the pyres. Because there was a period of weeks until the first results would be available, the FSA issued precautionary advice to farmers with animals on land within 2 km of a pyre, suggesting that people who consumed whole milk and whole milk products only from animals grazing within 2 km of the pyres might wish to vary their diet. When the evidence was produced, it indicated little additional risk and the advice was withdrawn. Reaction to this advice was generally very positive and seen to be a sensible application of the precautionary principle (see below). Details about this work are provided by the attached copy of an FSA submission to a Royal Society Inquiry into Infectious Diseases in Livestock (see Annex 2)

4. b A definition of the "precautionary approach" and an explanation of how it is applied in the Agency (Q656).

The Food Standards Act 1999 requires the Agency "to take account, in its decision-making process, of the nature and magnitude of risks which the action is designed to address . . . The Agency is also required to take account of any uncertainty in the evidence. For example, where it is taking decisions in relation to a risk which is potentially very serious, but about which there is very little evidence, the Agency is likely to want to take a precautionary approach."¹¹⁸

The Food Standards Agency Statement of General Objectives and Practices (October 2000; <http://www.food.gov.uk/multimedia/pdfs/sgop.pdf>) set out the general objectives we intend to pursue and the general practices we intend to adopt in carrying out our functions under the Food Standards Act 1999.

Here the precautionary approach is defined as:

"We recognise that there is often uncertainty in the science underlying our decisions and we shall explain these uncertainties and make sure it is clear how we have taken them into account. Where there is a risk of serious damage to public health, we will adopt a precautionary approach by acting quickly to implement appropriate measures to reduce health risks. Scientific certainty is rarely achieved in practice and we will not allow the absence of certainty to delay proportionate action. Equally, we will not use the absence of scientific certainty as an excuse for taking action other than that needed to protect public health and well being."

Taking a precautionary approach is further elaborated in "The Food Standards Agency's Approach to risk" statement (May 2001; <http://www.food.gov.uk/multimedia/pdfs/riskapproach.pdf>). This statement describes in general terms, how we approach risk issues so that everybody who may be affected by our decisions can understand our way of working.

"We will take a precautionary approach—that is, we will not always wait until we have proof of a potential hazard to take action or issue advice. Such action will be taken on the best available evidence to protect public health. It will be reviewed if new evidence becomes available."

¹¹⁸ Explanatory notes to section 23(2).

Our aim is to adopt an appropriate precautionary approach in developing and implementing policies where uncertainty is a significant factor in preventing the exact nature of any risk from being determined:

“When the risk is uncertain, we will take a precautionary approach. If there is good reason to believe that there could be a serious risk to public health, we will take appropriate action, in proportion to the risk, the consequences of the proposed action, and the level of uncertainty. We will act on the basis of scientific evidence, but we will not let the absence of scientific proof hold us back.”

As an assessment of how this approach is received in practice, reaction to the precautionary advice on Foot and Mouth Funeral Pyres was generally very positive:

“We warmly welcome the FSA’s warning. There’s a very sensible application of the precautionary principle . . . we think they’ve done exactly the right thing in emphasising that there is a very small risk and then telling the people who are most likely to be exposed to that small risk what the situation is, so that they can make up their own minds.” Charles Secrett, Director, Friends of the Earth, 25 May 2001.

“The risks are so incalculably small that the FSA could easily have sat on the information and said nothing . . . Instead, it has played the whole thing beautifully . . . In short, it has treated the British adults as adults. It has also behaved with utmost responsibility on its own account and remit . . . Would that there were more public bodies like that.” The Press and Journal (Aberdeen), 26 May 2001.

June 2006

Annex 1

Mr Kerry Hutchinson
Pesticides Environmental Policy Branch
Pesticides Safety Directorate

30 June 2005

Dear Mr Hutchinson

THE SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS—A DRAFT NATIONAL STRATEGY

Thank you for inviting the Agency to provide comments on the draft National Strategy for the Sustainable Use of Plant Protection Products. We welcome the development of the draft strategy in preparation for the expected EU thematic strategy.

DRIVERS OF CHANGE AND THE NEED FOR A STRATEGY

We recognise that the primary purpose of the strategy is to deliver enhanced environmental protection within the context of sustainable use of plant protection products. However as public concern over health effects of pesticides is recognised as a driver for change (para 1.24), and reduced risks to people is included in the benefits of the strategy (para 2.9 5th bullet point), we consider that it would be appropriate for these two issues to be addressed within the stated purpose of the strategy.

PART 2: INTRODUCTION

At paragraph 2.2 it states that “the strategy should take full account of existing and proposed controls and other regulations that affect or influence the use of plant protection products”. We fully support this but we suggest that the strategy would also provide an opportunity to recognise and co-ordinate policies and measures that already strongly influence the use of pesticides in the UK. The FSA and others, including Assured Produce and the major retailers, have already taken steps to address public concern and consumer preference by working to minimise pesticide residues, this we consider should be more rigorously covered within the strategy. Especially as the practices adopted to minimise residues may provide associated environmental benefits.

Consumer preferences also have a direct bearing and link with both the economic interests of farmers, growers and others using plant protection products, and impact on promotion of best practice. Rather than co-ordinated action with the FSA a more integrated approach is required within the strategy to minimise residues in food (paragraphs 2.3 and 4.3).

PART 3: TARGETS AND INDICATORS

Question 1 seeks ideas for targets and indicators. Public concern over health and consumer preference for a reduction in residues of plant protection products in food, even where there are no safety concerns, are listed amongst the drivers for change and a need for a strategy at paragraph 1.24. Our recent consumer research supports this approach. It revealed that although the majority of consumers asked are reassured

to know that authorities and assurance schemes exist that control the use of pesticides, the majority (68%) still want pesticide residues to be reduced further. It is therefore surprising and disappointing that minimising residues in food is not included amongst the Action Plans proposed in the draft strategy.

Whilst we would prefer to see pesticide residue minimisation as a specific action plan within the draft strategy, we suggest that it is none-the-less useful to assess whether the measures in the action plans currently proposed would have an impact on residues in food. The Pesticide Forum has identified residues in food as one of its indicators (Table below paragraph 3.5), but it has not been identified as being relevant to the proposed action plans in the table below paragraph 3.7. We would therefore welcome inclusion of this as one of the indicators in the draft strategy.

A further area where an additional indicator might be considered, in consultation with industry, is in progress towards the introduction of alternative products to pesticides (such as biological control agents) which are already widely available in other Member States. Perhaps a list of key/essential products might be developed for sponsorship by industry and progress either via the fast track or mutual recognition procedures, within a specified period of time.

Non-Government Schemes

Question 3 (p 21) invites comments on the list of measures that will affect plant protection use. Although the table that follows (para 4.5, p 24) recognises the role of farm assurance schemes it does not specifically acknowledge the recent development of best practice guidelines within Assured Produce crop specific protocols to reduce pesticide residues. We believe, subject to agreement from Assured Produce, that it would be appropriate to do so.

Organic Farming

Paragraph 4.10 states: "The Food Standards Agency is evaluating the relationship between organic farming (and non-organic farming) and residue levels in food". This statement is incorrect and should be deleted. In 2003 an Agency consultation sought views on what research it might usefully commission on organic produce. The Agency's position as a result is that given the breadth of the recent £12 million EU funded project being co-ordinated by Newcastle University (under the Framework VI programme) it makes sense to await the initial outcomes from this before deciding what more might usefully be done.

Possible new measures

We are aware that growers and advisors are currently faced with difficulties in determining which pesticides are most suitable for their particular circumstances, and appropriately balance environmental and operator considerations whilst meeting their objectives to minimise residues in food. We therefore welcome the recognition of the importance of a co-ordinated approach, that considers all of these factors.

We strongly support the suggestion to embed comparative risk assessment and substitution into the regulatory process as a possible action that might be considered within a strategy. Incorporating comparative assessment into a structured risk assessment approach would make the authorisation process more accountable and transparent. Whilst we support the substitution principle to help identify products that can be demonstrated to be safer and better than those currently available, we also recognise the importance of having a range of products with different modes of action available to avoid development of resistance. More detailed and user-friendly information about products together with tailored advice about product usage will be essential if producers are to make informed choices and select the most appropriate products for a particular circumstances.

We support the idea for an educational programme for the public to understand pesticide risk assessments for consumers, the environment and bystanders. Our consumer research supports the need for a better understanding on pesticides and the regulatory control.

We also support the proposal for a publicly funded advisory service, but suggest it covers conventional as well as non-chemical approaches to help growers to reduce the impact of pesticide usage.

Plant Protection Products Availability Action Plan

We welcome the recognition of alternative approaches to pest control and support the objective of encouraging the development and use of alternative products (such as biological control agents) and techniques to reduce dependence on chemical plant protection products. We support the proposed measures outlined in paragraph 4.30, such as fast-track registration systems for biological pesticides or mutual recognition of approvals granted in other EU member states, on the condition that such products meet at least equivalent levels of consumer safety to those approved in the UK.

PART 5: WHAT HAPPENS NEXT? QUESTION 6

Overall we welcome the strategy, however, we ask that it should not be restricted to measures that enhance environmental protection. We believe that whilst it is important for the UK to prepare its position for the EU Thematic Strategy, the development of a National Strategy provides the opportunity to consider environmental and consumer safety issues jointly, especially as action in one area may well have an impact in another.

A list of other general observations on the document is attached (Annex) for consideration before the finalised strategy document is published.

Yours sincerely
By email only
Corinne Vaughan
Primary Production Division

Annex

OTHER GENERAL OBSERVATIONS

What problems can arise from the use of plant protection products?

Paragraph 1.7 states that “the regulatory system is designed to ensure that pesticides constitute no danger to health of people (operators, consumers or bystanders) when used correctly”. We suggest it may be better to say it is “to ensure the safe use of pesticides”.

Existing Plant Protection Product Regimes in Great Britain and Northern Ireland

The first bullet point in paragraph 1.13 incorrectly states that the precautionary principle is the basis for placing protection of human health and the environment above the needs of agricultural production.

The fifth bullet point currently states that “a plant protection product will only be authorised if it does not harm human or animal health, pollute groundwater . . .”. It would be more accurate to say that “a plant protection product should not pose an unacceptable risk to health or the environment”.

The M and S in Member States should be upper case. This applies to paragraphs 1.13, 1.27, 1.28 and table under 4.13 but there may be other places too.

Paragraph 1.27: “. . . to help prepare and supporting . . .” needs a change of words?

Table 3 paragraph 3.5, point 3, Agency, the A should be upper case.

In table under paragraph 3.6 there is an inconsistent use of “parts per billion” and ppb.

Paragraph 4.28 recognises that the MRL programme will reduce available pesticide uses. You may wish to consider including a brief explanation why some pesticides will no longer be available.

Table (iii) paragraph 4.5, point 18, put ERDP in brackets on the left-hand side.

Annex 2

From: Steve.Wearne@foodstandard&gsLgov.uk
Sent: 13 December 2001 12:53
To: Gretton, Saskia
Subject: RE: Inquiry into Infectious Diseases in Livestock—Call for Detailed Evidence

Dear Ms Gretton,

Thank you for agreeing to accept material at this stage.

The rapid qualitative assessment by Department of Health of possible risks to public health from FMD disposal options concluded that the exposure to dioxins via the diet from FMD pyres would be minor compared to background exposure via the rest of the diet (Department of Health (2001): Foot and Mouth; effects on health of emissions from pyres used for disposal of animals, www.doh.gsi.gov.uk). The Food Standards Agency was keen to investigate further the degree of uncertainty inherent in the assessment, and so convened a meeting of external experts from government agencies and academia on 15 May. It was apparent that, although the pyre combustion, atmospheric dispersion and food chain modelling on which the assessment was based represented the best available science, there were large uncertainties in parts of the model.

The Food Standards Agency decided to commission a programme of monitoring dioxins in food produced in the vicinity of FMD pyres to validate the risk assessment. It was, however, going to be a period of weeks before the first results from the programme were available, as any dioxins deposited to grazing land would need time to accumulate in the fat of cattle only then being put outside and be excreted into their milk, and the complex nature of analysis for dioxins at such low levels meant that analysis could take a couple of weeks. The Food Standards Agency therefore issued precautionary advice on 25 May to farmers with

animals on land within 2 km of a pyre. The advice explained the risk assessment and the proposed monitoring programme, and suggested that people who consumed whole milk and whole milk products only from animals within 2 km of pyres may wish to vary their diet to include milk and milk products from other sources. Reaction to this advice was generally very positive. Notable quotes were;

“We warmly welcome the FSA’s warning. There’s a very sensible application of the precautionary principle . . . we think they’ve done exactly the right thing in emphasising that there is a very small risk and then telling the people who are most likely to be exposed to that small risk what the situation is, so that they can make up their own minds.”

Charles Secrett, Director, Friends of the Earth, 25 May 2001

“The risks are so incalculably small that the FSA could easily have sat on the information and said nothing . . . Instead, it has played the whole thing beautifully . . . In short, it has treated British adults as adults. It has also behaved with utmost responsibility on its own account and remit . . . Would that there were more public bodies like that.”

The Press and Journal (Aberdeen), 26 May 2001

Results from the monitoring programme were published in reports issued on 5 July, 8 August and 20 September (the final report, summarising all results from the programme, is due to be published within the next couple of weeks). By the time the third report was published, results were available for 120 samples of food and animal feed, and 39 environmental samples. The Food Standards Agency considered that these available results showed that the pyres had posed no additional risk to health through the food supply. In the light of these results the Agency concluded that the precautionary advice issued on 25 May was no longer necessary.

I will forward to you by post copies of the precautionary advice that the Food Standards Agency issued on 25 May 2001, the report on our monitoring programme published on 20 September, and our press release lifting our precautionary advice.

I hope that the Royal Society finds this information useful in conducting its enquiry.

Best regards,
Steve Wearne Food Standards Agency

APPENDIX 25

Memorandum from the Council for Science and Technology

“Scientific advice, risk and evidence: how Government handles them”

EXECUTIVE SUMMARY

The Council for Science and Technology is the UK Government’s top-level advisory body on strategic science and technology policy issues, reporting to the Prime Minister and the First Ministers of the Devolved Administrations. It is an independent body with its work programme developed by Council members in discussion with government. The Council provides advice to government through written reports and regular meetings with ministers and senior officials. Recent advice has covered energy strategy, public dialogue, and the use of personal information by government. Examples of the impact CST has had on the development of policy since it was re-launched in 2004 are provided below.

CST’S REMIT AND WAYS OF WORKING

1. The Council for Science and Technology (CST) is the UK Government’s top-level advisory body on strategic science and technology policy issues, reporting to the Prime Minister and the First Ministers of the Devolved Administrations. CST focuses on issues that cut across Government departments within the medium to long-term. CST was re-launched in 2004 with new terms of reference and ways of working, these are published on the Council’s website, www.cst.gov.uk, together with published reports and notes of meetings.

2. Members of the Council are respected senior figures drawn from across the field of science, engineering and technology (list at Annex). They are appointed by the Prime Minister and in line with guidance from the Office of the Commissioner for Public Appointments. CST can draw on additional expertise by inviting non-members to join subgroups that are taking forward specific pieces of work.

3. The Council has two chairs, each with a distinct role. Sir Keith Peters was elected from among the members; he chairs any meeting where CST is discussing and developing its advice to Government. Sir David King, the Government’s Chief Scientific Adviser, chairs those meetings where CST is reporting its advice to Government.

4. CST is an independent body and its work programme is developed by members in discussion with Government. However, the Government can and does ask CST to consider particular issues. The Council decides the approach to each area of work on a case-by-case basis, considering how best it can add value. It can also choose to deliver its advice to Government by various routes including: publishing reports; through confidential written advice; and through discussions with ministers, officials and special advisers. The Government is required to respond to CST reports.

5. The Council gathers its evidence through commissioning studies on specific topics, organising meetings and workshops bringing together individuals from across Government and other bodies, and has organised dinner discussions with top UK business people. The full council meets four times a year, with guests invited to speak on topics of relevance to CST's work programme. CST may also ask for written submissions.

6. After reports have been published, CST continues to monitor developments, revisiting its reports periodically, and feeds their recommendations into its other work. For example, CST's report on how better public engagement can lead to improved policy making (Policy through dialogue) has helped shape the conclusions on our energy and public health reports

SCIENTIFIC ADVICE PROVIDED TO GOVERNMENT

7. In March 2004, the Government published a consultation on its science and innovation 10-year investment framework. CST wrote to the Chancellor setting out its views on the emerging framework and offering to assist Government with reviewing progress on implementing the framework. The Government published its 10-year framework in July 2004 which acknowledged a role for CST in providing advice on the prioritization of strategic research issues.

8. In November 2004, CST wrote to the three lead departments (DTI, DfES and the Treasury) welcoming the Government's clear recognition of the strategic importance of science and technology to our society, and flagging up a number of areas that the CST sees as key issues for government and for the science base. CST will assist Government wherever possible in taking forward the aims of the framework document. CST will be responding to the Government's discussion paper Science and innovation investment framework 2004–14: next steps published with the 2006 Budget.

9. CST has produced a number of reports and recommendations to Government. During 2005–06 CST has focused on five main areas of work: innovation and wealth creation, the use of personal information by Government, energy, public health and the UK's research endeavour.

10. Recent reports are described below, with examples of the impact CST has had on policy development. The work on Real Options Analysis has a direct bearing on the Select Committee's interest in the treatment of risk within Government

AN ELECTRICITY SUPPLY STRATEGY FOR THE UK—MAY 2005

11. The CST report recommended:

- (i) immediate investment in large scale, low-carbon, energy generation facilities to meet the Government's carbon dioxide reduction targets;
- (ii) keeping the nuclear option open and placing more emphasis on carbon sequestration and tidal power;
- (iii) Government investment in R&D should be aimed at new and renewable fuel sources, energy management, storage and improving the supply and training of skilled workers in the UK;
- (iv) developing the transmission network to facilitate distributed and diverse generation; and
- (v) addressing the regulatory issues arising from this form of generation. The report also highlighted the collapse of energy RD&D budgets over the past 15 years, and the accompanying reduction in workforce supply and training.

12. CST wrote to Malcolm Wicks in April 2006, responding to the Government's Energy Review. We provided advice on the process for arriving at energy solutions—in particular the importance of market solutions and how particular technologies could contribute to the four energy goals. We have looked at a set of timelines for the range of energy technologies as we believe there is an urgent need to identify the fiscal and other drivers that will create the framework to encourage deployment of these technologies, as well as putting policies in place to overcome the barriers to their successful deployment.

13. We also provided advice on the need for public dialogue and engagement as an important component of a successful energy policy.

14. Together with the Royal Academy of Engineering, we arranged a conference "Energy 2100" which looked at a range of emerging technologies which might help power the UK and the world 100 years from now. It brought together 150 experts in the field and provoked stimulating debate.

15. Our energy work is a very good example of how CST has developed its relationship with Government on a specific issue in providing independent advice as the agenda develops.

BETTER USE OF PERSONAL INFORMATION: OPPORTUNITIES AND RISKS—NOVEMBER 2005

16. In November 2005, CST published a report that set out how the use of personal data by Government offers enormous benefits, with the potential to create more efficient and accessible public services, but that risks must be addressed in order to secure these benefits. Key recommendations included:

- extensive public engagement with the public and civil society groups;
- regulatory and governance frameworks to minimise the risks;
- research into privacy enhancing technologies;
- the creation of a focal point within Government to plan and coordinate a joined-up approach.

17. CST commissioned a number of case studies and arranged for a focus group exercise to engage in dialogue with the public on the key issues. The case studies and focus groups report are available on our website.

18. The report is having a far-reaching impact within Government departments and beyond. The Department for Transport's Chief Scientific Advisor, Professor Frank Kelly, came to meet the Council, and discuss the report's recommendations with respect to the Government's "Data Grand Challenge". Professor Kelly and Mark Walport (who chaired the CST subgroup) debated these issues at a recent Foundation for Science and Technology meeting.

19. The report has been praised at the most senior levels across Whitehall, and is being fed into the Ministerial Committee on Data Sharing, to which CST is expecting to give evidence. The Information Commissioner has also recognised the value of CST's recommendations, citing them in his response to the Cabinet Office consultation on "Transformational Government—Enabled by Technology" and in other *fora*.

20. CST will be continuing its interest in the use of personal data, relating this work to aspects of public health.

POLICY THROUGH DIALOGUE—MARCH 2005

21. In March 2005, CST published a report encouraging Government to do more to engage the public in the development of science and technology based policies, without which the economic and social gains expected from the 10-year investment framework for science and innovation were at risk. CST commissioned cases studies to identify how public dialogue has influenced policy development and decision-making in science and technology.

22. The report described how Government should adopt an explicit framework for the use of public dialogue to inform science and technology related policies, and emphasised a set of specific processes that should be followed. The principles from the report have underpinned much of CST's other work.

23. The Government accepted all of CST's recommendations in its response (published in September 2005) with parts of the report incorporated into the updated "Guidelines On Scientific Analysis In Policy Making". To address CST's call for the development of a "corporate memory", Government is undertaking a scoping study to establish the remit of a cross-Government resource on public dialogue, and has invited CST to conduct a thorough review within three years of the response.

24. CST acted as a catalyst within Government, by initiating contact between the Home Office Civil Renewal Unit and OSI's Science and Society Directorate. "Together we can", the Government's action plan to get citizens and public bodies working together was published soon after, and refers to the report.

A UNIVERSAL ETHICAL CODE FOR SCIENTISTS—JANUARY 2006

25. CST worked with others to develop and promulgate Rigour, respect and responsibility: a universal ethical code for scientists. This one page document sets out the values and responsibilities of scientists. It aims to foster ethical research, encourage active reflection among scientists on the wider implications and impacts of their work, and to support constructive communication between scientists and the public on complex and challenging issues. CST consulted widely on whether there was a useful role for this code. Two main roles were identified: educating and training new scientists; informing and supporting the development of more specific codes.

26. The Science and Society Champions network is piloting the ethical code across 10 departments, working out how to embed it in their training, appraisals, guidelines etc. Other bodies, including the Biotechnology and Biological Sciences Research Council and the Royal Academy of Engineering, are incorporating the principles in their own codes.

REAL OPTIONS ANALYSIS (ROA)—MAY 2005

27. CST has investigated the methods, tools, and systems available to Government in making strategic investment choices between different technologies to aid investment and monitor progress in relation to the 10-year Science and Innovation Framework. The report found that at this stage ROA was primarily useful as a qualitative rather than quantitative tool for stimulating thinking about the range of possible options available, and helping to make decisions on which to invest in.

28. This is an important piece of work which is starting to have an impact in a broader arena, for example on the treatment of risk within Government, and processes which Government might use to make choices.

WORK IN PROGRESS

Innovation and wealth creation

29. CST is looking at two particular areas:

- (i) identifying barriers to growth in high-tech science-based SMEs and
- (ii) the services sector.

Better use of Government Procurement is an important theme in both areas.

30. The first challenge is to ensure that the huge investments in science and technology, skills and education that Government has made over the last nine years translate into innovation and wealth creation by UK companies. There is a real need to improve the absorptive capacity by business of Government-funded R&D. Business innovation is an essential component of wealth creation and is not just about R&D expenditure, but covers areas such as marketing and skills. We believe that a focus purely on R&D expenditure will not deliver the sort of wealth creation Government wants to see.

31. SMEs across the board need to be incentivised to increase their R&D, but high-technology, science-based SMEs require particular attention to understand what is stopping them growing larger. The number of spin-out companies growing to medium-size and then into large organisations is lower than expected in the UK compared with the US—one factor may be the extent of their capacity to absorb research and development from the science base and elsewhere. UK innovation policies spread public sector finance more thinly compared with the US—typically by a factor of four and through grants rather than contracts. We believe Government can better meet its own objectives and stimulate innovation in business through better use of public procurement.

32. The services sectors account for over 80% of the UK economy and a substantial proportion of net exports. Many companies are highly innovative but relatively poorly connected to Government and the academic research base. Where there is connection, it is fragmented around different departments. The challenge for Government is to understand the needs of the services sectors, foster innovation, find ways to connect them to the research base and universities and develop an overall strategy to interacting with these important and high value-added sectors of business.

33. We will be putting forward proposals to the Government on these issues in the autumn.

34. CST met the Prime Minister to discuss these and other matters on 27 June, 2006.

Scientific input into Public Health

35. CST has been looking at how potential health impacts are assessed and used in policy-making across Government—this is an important issue that must go wider than the Department of Health. A report will be delivered to Government in the Autumn.

36. Recommendations will cover stakeholder engagement in the policy-making process—embedding health considerations at a very early stage of policy development in a common and consistent way which will lead to greater robustness and predictability; the use and availability of evidence—the extent to which health evidence has been sought, the quality of that evidence and how to remedy any shortcomings; and the need for public engagement.

Other current projects

37. *Research Endeavour*—CST is considering how to ensure that the UK remains at the forefront of the international research endeavour over the next 20 years, through a sustainable structural base, and access to a pool of bright, creative people whose capabilities meet business and society's needs.

38. *Nanotechnology*—CST is reviewing progress on actions set out in the Government's response to the Royal Society/Royal Academy of Engineering report "Nanoscience and Nanotechnologies: opportunities and uncertainties", reporting in Spring 2007.

June 2006

Annex

CST MEMBERSHIP

Sir David King—Government Chief Scientific Adviser.

Sir Keith Peters—Elected independent co-chair of CST in March 2004, President of Academy of Medical Sciences.

Professor Sir John Beringer—Chairman of the John Innes Centre Governing Council, previously Pro-Vice-Chancellor, University of Bristol.

Professor Geoffrey Boulton—Vice Principal and Regius Professor of Geology and Mineralogy, University of Edinburgh.

Professor Janet Finch—Vice-Chancellor, University of Keele.

Andrew Gould—Chairman and Chief Executive Officer, Schlumberger Limited.

Professor Wendy Hall—Professor of Computer Science, University of Southampton.

Dr Hermann Hauser—Venture Capitalist: co-founder of Amadeus Capital Partners Limited.

Dr Dieter Helm—Fellow in Economics, New College, Oxford.

Professor Alan Hughes—Director of the Centre for Business Research (CBR) and Professor of Enterprise Studies at the Judge Business School, University of Cambridge.

Dr Sue Ion—Member of Engineering and Physical Sciences Research Council, previously Executive Director of Technology, British Nuclear Fuels plc.

Sir Rob Margetts—Chairman, BOC Group plc; Chairman, Legal and General Group plc; Chairman, Natural Environment Research Council.

Sir Paul Nurse—President, Rockefeller University, New York.

Dr Raj Rajagopal—Chief Executive, BOC Edwards and Executive Director, BOC Group plc.

Professor Michael Sterling—Vice-Chancellor, University of Birmingham.

Professor Kathy Sykes—Professor of Public Engagement in Science and Engineering, Bristol University.

Dr Mark Walport—Director, Wellcome Trust.

APPENDIX 26

Memorandum from the Committee on Radioactive Waste Management (CoRWM)

The Committee on Radioactive Waste Management was set up towards the end of 2003, under the "Managing Radioactive Waste Safely" programme, to advise UK Government (through Defra) and devolved administration Ministers on the best option, or combination of options, for the long term management of the UK's higher activity radioactive waste.

The Committee, which consisted of a Chair and 12 members, was required to carry out its assessment in a manner which combined sound scientific input with wide-ranging public and stakeholder engagement. CoRWM was also required to carry out its work in an open and transparent manner, and to leave a fully documented audit trail for the recommendation arrived at. CoRWM's full terms of reference and details of its working methods and outcomes are published on its website on www.corwm.org.uk. The Committee holds the majority of its plenary meetings in public.

Sponsoring Ministers wanted to ensure that CoRWM delivered its recommendation to an agreed timescale. Following discussions with the Committee it was agreed that the recommendation would be delivered by July 2006.

CoRWM undertook initial preparatory work to familiarise itself with its task and to help plan the way it would undertake its work. The Committee developed and refined its plans, keeping sponsoring Ministers informed. Essentially, the sequence of work has been preparatory fact finding and planning, development of option assessment methodology (including option shortlisting for detailed assessment), assessment and reporting to Ministers.

Towards the end of 2004, the CoRWM Chair, Professor Gordon MacKerron, reported that the behaviour of one of CoRWM's members, Dr Keith Baverstock, was becoming a risk to the Committee's work and delivery of its recommendation to time. Dr Baverstock was himself levelling charges at the effectiveness of the Committee (including its application of science) and the probity of some of its other members (in the way packages of work were contracted out).

With this in mind, and recognising that there were two views to take into account, Defra and devolved administration Ministers commissioned a review from the OCPA-trained independent assessor for the CoRWM appointment process, Mr Roy Roberts, with the terms of reference:

"To consider: (i) concerns identified and expressed by Dr Keith Baverstock concerning the operation of the CoRWM committee; and (ii) the role and personal contribution of Dr Baverstock in delivering the corporate aims and objectives of CoRWM. To report the outcome of the review and to provide recommendations as appropriate to CoRWM's sponsoring Ministers".

Mr Roberts commenced his review in January 2005 and reported to Ministers in March 2005.

The independent assessor's conclusion was that there were too many negative aspects to Dr Baverstock's behaviour to recommend that he stayed a member of CoRWM. While there were clearly differences of view between Dr Baverstock and other members of the Committee, the main concerns were about his behaviour in interacting with the Chair and other members. Accordingly, the then Minister for Environment, Mr Morley, wrote, with the agreement of devolved administration Ministers, to Dr Baverstock on 4 April 2005 saying:

"On the basis of this, I am writing to inform you, on behalf of all CoRWM's co-sponsoring Ministers, that it is our intention to terminate your appointment to CoRWM, because on the evidence presented to us, we are of the view that:

- you have not demonstrated ability to meet the requirements set out in the original advertisement for the post;
- you have not sufficiently contributed, as a member of the CoRWM team, to securing the Committee's corporate objectives, as set out in its terms of reference, within the time allocated.

However, we shall delay a final decision for fourteen days from the date of this letter to enable you to take up the offer of a briefing by Mr Roberts at which you may also make any additional representations that you feel may be relevant".

Dr Baverstock replied on 8 April 2005 saying:

"Since I cannot, with a clear conscience, support CoRWM's present corporate position or its process I have no wish to continue to serve on CoRWM unless there is a major change both in direction and management, and to this end Professor David Ball and I have called for the resignation of the CoRWM management".

On April 19 2005, Mr Morley replied:

"I note your statement that since you cannot with a clear conscience, support CoRWM's present corporate position or its process, you have no wish to continue to serve on the Committee unless there is a major change both in direction and management. This is not proposed.

In light of these considerations and the position set out in my letter of 4 April 2005, I am writing to inform you that your appointment to the Committee is terminated with immediate effect from the date of this letter".

Professor Ball, in respect of whose position there were no specific concerns, had increasingly aligned himself with Dr Baverstock, as the latter's letter of 8 April 2005 makes clear, and resigned in sympathy from CoRWM on 20 May 2005.

Subsequent to these events, an audit of the CoRWM appointments process carried out by the Office of the Commissioner for Public Appointments, as a result of complaint raised by Dr Baverstock and Professor Ball, confirmed that the process had complied with the Commissioner's Code of Practice. Additionally, a case against Defra brought by them to Employment Tribunal, claiming respectively unfair and constructive dismissal, was rejected.

Sponsoring Ministers consulted the CoRWM Chair, Professor MacKerron, as to whether the two lost members should be replaced. The argument in favour was that it would take the Committee back to its original complement and spread of expertise. The argument against was that it would require two new members, who had not been party to all the Committee's foregoing decision-making and who would need to be brought up to speed, to be taken on more than half way through the Committee's work programme. Recognising that CoRWM had a range of avenues for securing access to external expertise, it was decided not to replace the two lost members. CoRWM's work proceeded as per the programme agreed with sponsoring Ministers.

The independent assessor's report found no substance in Dr Baverstock's own expressed concerns, noting:

- no substantive criticisms of the Committee process; and

- that the Chair had gone to considerable lengths to accommodate the views of all members, and had been particularly patient in dealing with Dr Baverstock.

To ensure that there was ongoing oversight of CoRWM's budgeting and financial control, an independent CoRWM Cost Review Panel was established and subsequently reported three times—in July 2004, September 2004 and November 2005—on CoRWM's budget and financial processes. The Panel included a Commercial Director of WS Atkins, a member of the Scottish Executive, a member of Defra Finance and, for the final review, a member of Defra Internal Audit.

Also, in November 2004, Mr Morley informed the House of Lords Science and Technology that:

“As the work of CoRWM proceeds, the Defra Chief Scientific Advisor, will be taking a particular interest in the latter arrangement for scientific and technical quality assurance and peer review to ensure that they are robust.”

This led to the Chief Scientific Advisor establishing a panel of four scientific experts to advise both him and CoRWM on the conduct of the Committee's work and to mitigate any risks the departure of Baverstock and Ball from the Committee might create. This panel consisted of Professor Peter Guthrie OBE (Cambridge University, Engineer), Professor Bill Gelletly OBE (University of Surrey, Nuclear Physicist), Professor Nigel Bell (Imperial College, Environmental Pollution) and Professor Steven Sparks FRS (British University, Earth Sciences).

The panel advised the Chief Scientific Advisor and CoRWM on both the design and implementation of CoRWM's option assessment programme. This led to the Chief Scientific Advisor responding to the open letter sent to him by Dr Baverstock and Professor Ball dated 4 May 2006 as per the letter at Annex A. As his letter also notes, CoRWM has also increasingly interacted with learned bodies such as the Royal Society, the Royal Academy of Engineering and the Geological Society as its work programme has proceeded.

June 2006

Annex A

18 May 2006

Dear Dr Baverstock and Professor Ball

Thank you for your letter of 4 May. You raise two issues, CoRWM's use of science and the probity of CoRWM members. As a Chief Scientific Adviser I am only qualified to comment on the science issues. I believe that the issue of probity has been addressed in previous correspondence, in light of appropriate Defra/devolved administration review.

As you note CoRWM have now published their draft recommendations. There is currently a short round of Public and Stakeholder Engagement regarding these draft recommendations and consequently these may change, at least to some degree, between now and when we receive CoRWM's final recommendations and report in July. It is also likely that their draft recommendations will be explained in their full and final report.

However, you raise a number of concerns about use of science in CoRWM's processes and my role as Defra's Chief Scientific Adviser. I will aim to address these here.

Since March 2005, following concerns of the House of Lords Science and Technology Committee, I have been closely following the scientific work of CoRWM. To assist me in this, I appointed a panel of four scientific experts¹¹⁹ from the academic community to advise me. Over the last 14 months they, and colleagues from Defra's Science Directorate, have attended many of CoRWM's meetings where there has been a substantial scientific input.

These have included the workshops to input into CoRWM's Multi-Criteria Decision Analysis (MCDA) process—CoRWM's major, although not only, mechanism for bringing in scientific expertise. After each series of these meetings, my Expert Panel have reported to me that the expertise present was comprehensive, that the debates were open and objective and informed by the latest scientific and engineering knowledge. From this feedback, I can only conclude that CoRWM (or indeed its sponsors) are not in any way “anti-expert” as you suggest.

In November last year, I attended a Royal Society meeting on radioactive waste, which was also attended by CoRWM members and members of my Expert Panel. The debate was very informative, and CoRWM and Expert Panel members have also attended a similar meeting held by the Geological Society. Both these meetings had a widespread scientific expertise available for CoRWM to utilise.

Considering what I have observed and had reported to me over the last 14 months via my Expert Panel, I cannot agree with your views that CoRWM have had insufficient scientific input into their process. I am aware, however, that much of this scientific input that I have observed has been later in the committee's programme than when you were both directly involved in committee's work.

¹¹⁹ Prof Peter Guthrie OBE (Cambridge University, Engineer); Prof Bill Gelletly OBE (University of Surrey, Nuclear Physicist); Prof Nigel Bell (Imperial College, Environmental Pollution); Prof Steven Sparks FRS (Bristol University, Earth Sciences).

You raise my role as one to “advise Defra and its Ministers from a position of independence on issues of science . . .”. I agree with this and strongly refute your assertion that I have “apparently unquestioningly sided with Defra’s overtly political stance”. My role is to advise on, and challenge, the Department’s use of science independent of policy lines—that is what I am asked to do by Ministers. It is for this reason, to ensure my independence in this context, I set up my own Expert Panel to advise me directly, independent of and despite of CoRWM’s own QA group, peer reviewers and independent assessor. At the time, some may have seen this as “QA-overkill”, but I was determined to ensure I received direct expert advice, purely on the scientific issues and in no way related to the many political issues that inevitably surround such an important and high profile subject. I am very grateful for the advice, impartial expert knowledge and time commitment that my Expert Panel have continued to provide as CoRWM’s work has proceeded.

Finally, CoRWM’s draft recommendations have most recently been supported in press releases by the Royal Society¹²⁰ and Geological Society.¹²¹ The Royal Society’s press release notes that the recommendations “appear to have taken account of the views of both the public and the scientific community”. The press release also points out that “strong representation from the scientific community” will be required as we implement the recommendations. I very much agree with this view as implementing the recommendations will be a more “scientifically intense” process than CoRWM’s programme of work. I am working closely with policy officials to ensure that appropriate mechanisms are in place for quality scientific expertise to be brought to bear on the implementation process.

Yours sincerely
Howard Dalton

APPENDIX 27

Supplementary evidence from the Office of Science and Innovation following evidence session on 5 July 2006

S&T COMMITTEE QUESTIONS

1. *The Committee would like to have further information on the cross-Government work on risk being chaired by Sir Brian Bender (Q 1386). Specifically, what outputs has this work produced; what steps have been taken to ensure that there is no duplication of work on risk in different Government departments, for example with the Cabinet Office; what further work is planned; and what efforts are made to ensure compliance with best practice on risk across Government?*

BACKGROUND

Risk and its management has been a concern of government for some time. High profile crises such as BSE, Foot and Mouth Disease, rail accidents and failed IT projects, and the recognition that there were examples of good management of risk in the private sector for example, BP, lead to Treasury, Cabinet Office and PM’s Strategy Unit seeking to improve government’s capability to manage risk. The Strategy Unit’s report in November 2002 recommended the setting up of a government wide programme to support and monitor progress to improve government’s capability to manage risk. In December 2002 The Prime Minister announced a two year Risk Programme overseen by a Permanent Secretary level steering group, chaired by Sir David Omand, and reporting to the then Chief Secretary, Paul Boateng.

Both the final report of the Risk Programme to the Prime Minister published in November 2004 and the Public Accounts Committee report on “Managing risks to improve public services” published in June 2005 highlighted a measurable improvement. Both reports recommended that momentum had to be maintained and that whilst improvements have been made significant challenges remained. In addition to publishing progress reports the Risk Programme produced guidance to departments on “Managing risks with partners” (published with OGC), “Early management of risks to successful delivery—a tool for policy makers”, and guidance on “Risk Communication” (published with Cabinet Office) placed on UK Resilience website.

To maintain momentum, the Prime Minister asked the then Cabinet Secretary, Sir Andrew Turnbull, to put in place arrangements following the ending of the Risk Programme. Sir Andrew Turnbull invited Sir Brian Bender to establish a sub-group on risk to report on progress annually to the Civil Service Management Board and to address the remaining key challenges:

- *even better anticipation of risk, and more early action to tackle it*—there are still too many major policies and projects starting before the risks have really been understood and gripped;

¹²⁰ <http://www.royalsoc.ac.uk/news.asp?id=4619>

¹²¹ <http://www.geolsoc.org.uk/template.cfm?name=CORWMReport>

- *better management of risk with delivery partners*—increasingly we are delivering services and projects through partnerships, either with the private sector or the wider public sector. Yet our evidence is that Departments do not feel confident of successfully managing risks in this environment;
- *further embedding of risk management in the core processes of government* for example in the current Comprehensive Spending Review;
- in some cases more needs to be done to understand the overall portfolio of risk a department faces and to work out how to present this information to the board in a concise fashion;
- *continuing to develop an open dialogue with the public on risk issues, to build confidence and trust*;
- behind all of this lies an issue we have been grappling with for some time—*creating a culture of leadership for delivery and reform and on managing the inevitable risks this brings*.

Governance changes made by Cabinet Secretary to the Civil Service in December led to CSMB sub-group on risk being renamed as the Permanent Secretaries' Management Group (PSMG) sub-Committee on risk. The sub-committee continues to be supported by a Secretariat based in the Assurance, Control and Risk team of the Treasury. Membership of the sub-Committee includes representatives from DTI, HMRC, DWP, CO-SIC, OGC, MoD, DfID, CO-GCN, HMT, Defra, DCLG.

PROGRESS

Progress in government's capability to handle risk is measured with a Risk Management Assessment Framework (RMAF) tool that has been developed for departments to self-assess their progress. In July 2005 the average departmental score for all seven categories assessed ie, capabilities and results, was 3.1 out of a total of five compared with 2.9 in November 2004. For the financial year 2005–06 departments were asked in February to submit returns to the Treasury by 3 July. The Treasury team is analysing these returns, and the sub-Committee has planned to review a draft report of that analysis in October.

Departments have moved well beyond merely being aware of risk to increasingly using risk management processes in their decision-making and management processes. In some cases more needs to be done to understand the overall portfolio of risk a department faces and to work out how to present this information to the board in a concise fashion. Guidance on how departments might do this is being prepared. It is recognized that within departments necessary cultural changes need to be reinforced, especially by rewarding the well-managed risk taking that is part and parcel of finding new and innovative ways to deliver services.

The sub-Committee on risk has considered the way more can be done to establish a culture of well-managed risk taking. Key to establishing such a culture is supporting the sharing and learning of good practice. Last September departments were requested to identify and submit examples of good practice for sharing. A set of 23 good practice examples from across government was published in March. A second set of good practice is planned for publication later this year, again based on examples identified by departments, along with specific guidance on Risk Appetite.

OUTPUTS

Key outputs include:

- “Managing Risks to the Public: Appraisal Guidance”, published by the Treasury in June 2005 as a supplement to The Green Book.
- “Improving Government's Risk Handling: First report to CSMB sub-group on risk”, July 2005.
- “Risk: good practice in government” published in March.
- “Mastering Innovation and Risk” conference, March. Sir Brian Bender gave a keynote address on risk in government. Other keynote speeches given by Chief Secretary (“Innovation, risk and management”) and Edward Leigh MP, chair of Public Accounts Committee. The conference saw the launch of the good practice guidance. The National School of Government launched report of study into “Innovation and Risk Management”.
- House of Lords Economic Affairs Committee inquiry on “Government's policy on the management of risk”. Sir Brian Bender, in his capacity as chair of the PSMG sub-Committee on risk, supported the Chief Secretary to the Treasury when giving evidence to the Committee in November. The Committee's report, published on 7 June, concluded that “Government is taking risk policy seriously”.
- Ministerial seminars in November and April chaired by Chief Secretary. Sir Brian Bender and Mary Keegan provided expert briefing to groups of ministers on risk and financial management.
- Risk management continues to become established and understood as a valuable element of business and corporate management. The current round of departmental Capability Reviews

being undertaken by the PMDU specifically identify the management of risk under both delivery and strategy capabilities, with an effective corporate culture being identified under the other capability, leadership.

WORK TO ENSURE NO DUPLICATION

Following each of the six meetings of the PSMG sub-Committee on risk Sir Brian has written to Sir Gus O'Donnell, copying in his Permanent Secretary colleagues, to share the sub-Committee's deliberations, conclusions and actions.

All main departments have in place a Risk Improvement Manager (RIM). Meetings for RIMs are held in the Treasury four to five times a year to identify and discuss common issues on risk across government. The RIM network provides an opportunity to identify common areas for improvement and share good practice and for highlighting common risk strands across government.

The sub-Committee's Secretariat is active in networking with other groups and communities eg, Excellence in Policy Making Network, OGC's Cross Department Risk Forum, and regularly communicates with others in government working specifically on risk eg, Better Regulation Executive and OGC Efficiency team. The Secretariat worked with the Office of Science and Innovation to hold an event in May for policy makers on "Analysis and risk into policy".

FUTURE WORK

In October the sub-Committee will review the draft report prepared by the Treasury team on progress made by departments to improve their management of risk. A second edition of the good practice guidance is being prepared for publication later this year. Separate guidance to departments on "risk appetite" is also being prepared for publication.

The publication of the first four departmental Capability Reviews being undertaken by the PMDU indicate that risk management was integral to, and firmly within the scope of, the Reviews undertaken so far.

At its last meeting, held on 7 July, the sub-Committee confirmed its earlier view that this current round of centrally required departmental self-assessments on risk should be the last. The sub-Committee is considering whether it is coming to the end of its natural life as a standing group. A decision on its future will be made at its next meeting in October.

2. Has Sir David ever investigated allegations of suppression or misuse of research by Government departments (Q1378)? If so, please provide details.

The GCSA's Guidelines on Scientific Analysis in Policy Making encourage the publication of the underpinning evidence for a policy decision. The Guidelines state there should be a presumption at every stage towards openness and transparency in the publication of expert advice. This is also covered in Section 35/6 of the Freedom of Information Act.

It is part of the role of the departmental CSA to ensure this is adhered to, so any concerns would be addressed to them in the first instance. However, in cases where the party raising the concerns feels a departmental CSA has not dealt with the issue adequately, Sir David will investigate. To date, he has received no such requests.

Publication of government statistics is governed by published protocols, publication of government social research is a matter for departments, with guidance provided by the Chief Government Social Researcher.

However, the Committee identified an area of concern regarding the publication of Professor Hope's research funded by the Home Office. Whilst it is slightly unclear as to what the exact nature of the concerns was, Professor Wiles (Home Office CSA) can confirm that Professor Hope's research has been published and is available on the Home Office website. This is in line with the Home Office's practice of publishing all social research subject to three constraints:

- It is of sufficient quality to be published—assessed by external and independent peer review (if it is not of sufficient quality to be published by the Home Office authors are free to seek publication elsewhere).
- It is not against the national interest to publish the research.
- Consideration of commercial confidentiality issues.

3. Has the Government ever commissioned independent reviews to assess the performance and working methods of scientific advisory committees? If so, please provide details. If not, please explain how the Government ensures that such committees are functioning effectively?

It is part of the role of departmental CSAs to ensure that scientific advisory committees within their department are performing effectively. However, OSI are currently undertaking a series of science reviews in each department and scientific advisory committees and the implementation of the Code of Practice by which they are covered, are included as part of this process. The Steering Panels for each review is made up of a team of independent senior scientists.

Individual departments also carry out their own reviews in this area. For example, Defra are currently reviewing how their Non Executive Bodies could be improved. Scientific advisory committees are included within the scope of this review.

4. *The witnesses undertook to provide a written response to the Chairman's final question on engagement with the media (Q1403).*

Q 1403: Just finally, can I ask both Alistair and David, in terms of the media, you mentioned the media earlier and how important it is actually to have a positive engagement with the media, in terms of science? I think, Kathy Sykes's programme, engaging with science is the right terminology, but do you feel, Alistair, that the Government gives enough time actually to engaging properly with the media, in terms of getting messages over about science? Issues, like GM, for instance, which was very badly handled, the nuclear issue you could perhaps argue again is a difficult concept which it is important to engage; and do you think, in terms of your profile, David, it is important that you have had a high media profile and that other senior scientific advisers, departmental advisers, should also have a high media profile within their departments? Could we have written answers to those questions, so that I can close this session, at this moment in time, and thank Sir Brian Bender, Alistair Darling and Sir David King for your attendance this afternoon.

The Secretary of State believes it is essential that Government build a constructive relationship with the media not only in science, but also in all coverage. We have to respect the media's right to publish what they choose to, but we are of course aware of the damage that inaccurate or sensationalist reporting can cause with respect to perceptions of the wider public and other stakeholders, MMR and GM being classic examples.

As Permanent Secretary for Government Communications, Howell James, along with Sir David, Sir Liam Donaldson and John Hutton MP (then Chancellor of the Duchy of Lancaster) met with BBC, ITN and Sky editors to talk about the responsible reporting of risk. They came across as responsible and interested and clearly understood Government's concerns.

Howell and others have continued to meet with the media to discuss risk in relation to specific issues. For example, a media sub-group of the Media Emergency Forum met recently to discuss issues relating to Avian and Pandemic Flu.

Sir David King believes the most important thing is that issues are presented in the media in an accurate and responsible way. If a high media profile for myself or any of the departmental CSAs can help deliver that, then we are happy to have them. As we are independent, it is important that we are not seen (by Government or the media) as a channel for promoting Government policy, and we of course retain the right to comment publicly on government policies where we believe the evidence on which they are based is not robust. However, on more general issues such as building constructive relationships with the media, I am happy to work with the Permanent Secretary for Government Communications and others.

August 2006

APPENDIX 28

Supplementary evidence from the Office of Science and Innovation [further to Appendix 27]

The answer to question 1 [Appendix 27], under Progress, gives the average score of departments on the risk management assessment framework for 2004 and 2005. Would it be possible to have the scores for each department for these years?

"This exercise was undertaken by Treasury with the intention of improving policy formation and delivery. This was done by investigating, in detail, areas of recent policy development involving Ministers, senior officials and the relevant Departmental Risk Improvement Managers. To be useful, this required candid exposure of highly sensitive decision-making in key policy areas that could lead to improvements in best practice. Moreover, as the experience involved self assessments by Departments, the Permanent Secretaries sub-group on Risk has reached the view that comparison of Departmental scores is not meaningful. For both these reasons, the details have been withheld, though it was decided to share publicly the direction of travel of Whitehall at large."

September 2006

APPENDIX 29

Memorandum from Professor Malcolm Grimston, Associate Fellow, Chatham House

Notes for Presentation on launch of Chatham House report, *The importance of politics to nuclear new build*, <http://www.chathamhouse.org.uk/pdf/research/sdp/Dec05nuclear.pdf> 6 December 2005.

It is often stated that we need three things from our energy systems—secure, economic supplies which do not have unacceptable environmental consequences.

A cursory glance at the history of nuclear energy over the last two or three decades reveals that such an analysis is only partial. Energy supplies must also satisfy a series of political imperatives which are related to, but not the same as, the above requirements. Since the late 1970s no fewer than 25 civil nuclear plants have been closed early, or refused an operating license, in OECD countries. Many countries have instituted legal or policy barriers against developing nuclear energy in the future.

Increasingly, problems which can be regarded as arising at the interface between scientific industries and the political establishment are being seen in other fields—BSE, the MMR vaccine, mobile phone masts, Genetically Modified Organisms, animal experimentation etc.

Paradoxically, outbreaks of profound public concern at activities that in all likelihood represent very small risks to human health are seen at a time when life, at least in the developed world, has never been safer. Disputes in these areas have come to follow a common path.

- A media-inspired panic begins, based on a small number of possible cases, usually presented by concerned relatives of the alleged “victims”.
- Scientists are misquoted or misunderstood to say that there is “no risk” associated with the activity in question.
- Politicians make unequivocal statements of “comfort” and criticise “scaremongering”.
- A few anomalies appear in the research—often involving doing some basic arithmetic on a “cluster” of the alleged damage which has already been found, a dubious statistical practice.
- There is a political panic.
- A Report is Commissioned, the panel consisting mainly of “experts” but with a few token “worthies” and campaigners (or, more recently, the panel consisting mainly of “worthies” and campaigners but with a few token experts).
- The Report is published, saying that there is almost certainly no problem . . . but new evidence may come forward etc and science can’t prove a negative anyway.
- The media covers the BUT and ignores the rest of the report.
- More research is called for, in the psychologically irrational belief that this will put minds at rest. (In reality, of course, it reinforces the view that there must be something wrong if all that public money is being spent looking into it.)

The paper which we are launching today pursues two themes. First, the philosophical and practical mismatch between the political and technical mindsets. Secondly, the periodic changes in societal ethics between a basically utilitarian approach (often observed during times of societal stress) and a Kantian or rights-based approach, often more dominant during times of relative comfort.

Politicians, like many segments of the population, seem to regard scientists as sources of “facts” and “truth”. Scientists, by contrast, regard what they do as being more in the way of informed guesswork—a hypothesis can only ever be viewed as “work in progress”, something which explains reality with more or less accuracy but which will always be liable to be revised or overturned if new data become available. For the scientist, the past is a region of relative certainty but the future is inherently uncertain if not unknowable outside certain limits. For the politician, by contrast, the future is certain—nice if you vote for us, nasty if you vote for them—but there is enormous dispute over what happened 10 years ago and whose fault it was. Dr Vince Cable MP argues that the five differences between the politician and the scientist can be described as speed, superficiality, spin, secrecy and scientific ignorance.

Two consequences flow from the failure of these two world views to understand one another: scientists are consistently asked to “prove a negative” with respect to some perceived potential risk; and a scientist who appears to have “got it wrong”, who is quoted as saying there is “no risk” when subsequently some small risk appears, is portrayed as a knave or a fool—despite the fact that the best scientists spend much of their time trying to prove their hypotheses wrong or inadequate.

In recent years this way of thinking has been extended to the whole scientific venture. In my role as Chairman of the Education Committee for a local authority I once received a letter from the local Green Party claiming that the same scientists who had said the Chernobyl could not happen were now saying that genetically modified food was safe. Further enquiries failed to reveal the names of the scientists involved.

This relationship worked to a certain extent when politicians and the public “trusted” scientists, though even then the failure to understand the eternally provisional nature of scientific pronouncements led to some poor decision-making. However, recently it seems that science has lost its (proper) unique position as a guide to action because it is (correctly) no longer perceived as being infallible. Increasingly, committees examining complex scientific issues are being populated by lay members, “elevating public opinion over professional expertise and subordinating science to prejudice”. As one commentator has put it with respect to mobile phones, “In the rush to be open about communicating risk to the public, the government has simply forgotten that there was no risk to communicate”.

Of course political and ethical values are of central importance in helping to guide us how we should live, both as individuals and in society. But they are not effective tools for judging and measuring physical reality.

This breakdown in the relationship between politics and technology—accompanied by other phenomena often grouped under the general heading “decline of deference”—could presumably have happened at any point in history of human society, and indeed from time to time throughout that writers have noted similar social trends. So why has it been so marked over the last couple of decades?

It is of course difficult to formulate robust theories when viewing something as complex as society, where for example it is impossible to run the whole thing again changing just one variable and seeing the effect. It seems highly likely, for example, that the influence of the Internet and the availability of mass information (and misinformation) has played a part in encouraging single-issue pressure groups at the expense of traditional representative democracy.

However, let us offer a hypothesis. When society is under stress, people accept, or even demand, a broadly utilitarian ethic—what is “right” is what promotes the greatest good for the greatest number, even if some individuals are caused disadvantage in the process. When society feels comfortable, by contrast, the importance accorded to individual rights, even if by protecting those rights projects which would benefit large numbers of people cannot be pursued. The differences impinge on other areas of decision-making. In the former, for example, “the environment” is regarded principally as a tool, in the latter as something with intrinsic value of its own.

Each ethic has a different preferred mode of political leadership: “strong”, radical, collective (high voter turnout), deferential versus “consensual”, atomistic, empowering. The same leader who may be regarded as “strong” in one set of circumstances can be viewed as “dictatorial and out-of-touch” in another, while another leader may find themselves perceived as “weak” or “inclusive” depending on how society may be feeling about itself. Margaret Thatcher was not materially a different leader in the early 1980s, when the UK faced a number of threats from industrial action and the invasion of the Falklands, and the early 1990s, when she was deposed by her own parliamentary colleagues. What had changed, it can be argued, was the degree of comfort society was feeling in the two decades. By contrast, Tony Blair, the master of the inclusive “big tent” politician well suited to a society with a healthy economy and few apparent external enemies, came seriously unstuck when he tried to behave as the “strong” leader over the invasion of Iraq.

The issue, though, is more complex than this. Schopenhauer argues that each of us has our own “misery quotient”, tending to live our lives at the same general level of long-term unhappiness irrespective of how life is going. We therefore tend to search for justifications for our anxieties in our environment.

The thought can be developed. When society faces real threats we can envisage what might make things better—a victory in the war, solution of a long-running industrial dispute etc. When things seem to be going “well”, however, we find ourselves becoming anxious over risks which, if they exist at all, cannot be regarded as “serious” by any objective sense. It is more difficult to imagine what a “resolution” of these risks—radiation associated with mobile phones, for example—might look like. Often they are much less tangible (and indeed are often undetectable using our normal senses). The result can be a disengagement, a more fatalistic attitude which can paradoxically result in greater unhappiness. It is a well-established observation that people are often happiest at times of extreme stress such as wartime, when for example suicide rates generally fall significantly.

Yet politicians must be seen to respond to society’s anxieties. If, as the above analysis suggests, we tend simply to move on to find another object for our fears if one should be dealt with then the potential for action designed to allay fears being counterproductive is considerable.

In a sense one might not think this matters much. After all, we could simply wait for major problems to arise, switch our leaders for more decisive ones until the storm subsides, then go back to consensus.

Unfortunately, in the case of energy in particular, solutions cannot be found instantly. The timescales involved in planning and licensing a new power station or pipeline, saw, constructing it and operating it for long enough to make a decent return on investment can easily run into decades. We simply cannot afford to wait until the energy and environmental crisis is upon us before gearing up our political culture to take difficult and controversial decisions.

There is an urgent need, then, to reintegrate sensible science into decision-making. The political establishment must recognise that some problems simply cannot be discussed away and that a strong lead will be needed even if society is not quite ready for strong leadership.

There is risk but there is also potential reward for any politician prepared to take on short-term opinion in this way. The history books are kind to those who advocate and take effective action before the need is widely recognised. The public service element of politics—the desire of all those who enter the field to do good—has become obscured by the thoroughgoing cynicism of the media and, perhaps, by the obsession with spin and presentation which has overtaken politics in recent years as a further symptom of political paralysis in the face of a society unwilling to accept strong leadership. Nonetheless, leading politicians want to do good and want to be remembered for doing good. Ducking difficult decisions is unlikely to deliver them of either of these goals.

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